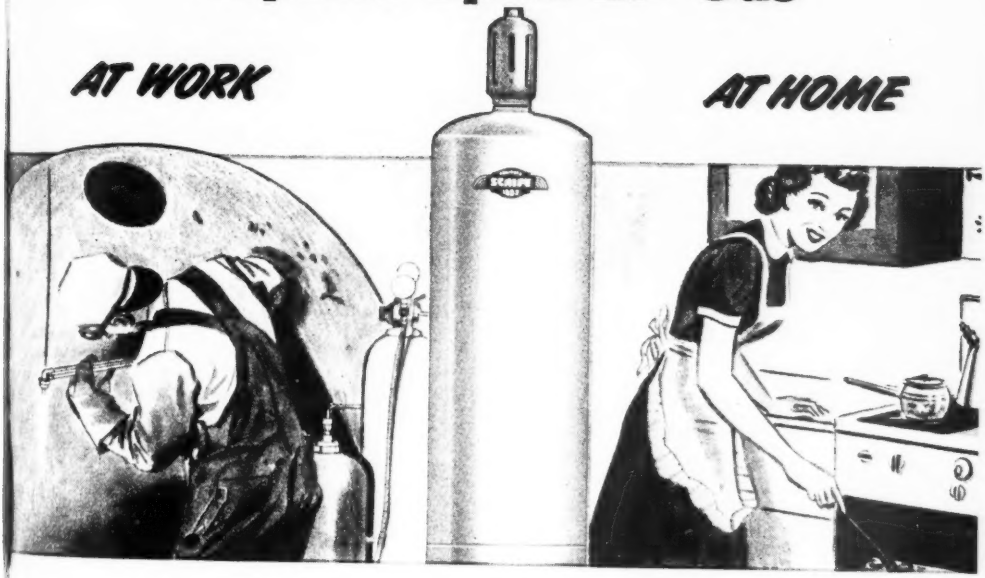
BUTANE-PROPANE News

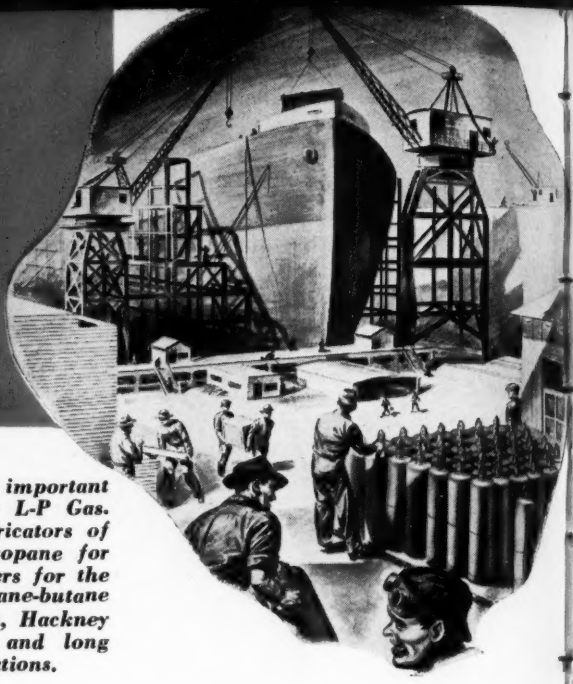
25¢

DEFENSE WORKERS
depend upon LP-Gas



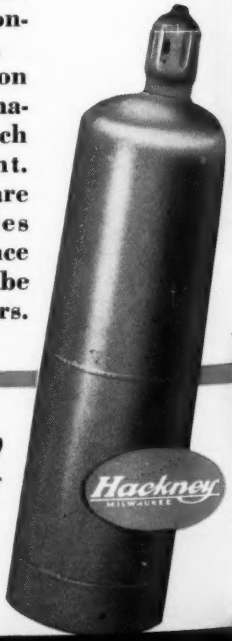
JUNE 1943

L-P *gas and Hackney Cylinders help build ships . . .*



Cutting of metal is among the many important war-time services being performed by L-P Gas. Many shipyards, as well as other fabricators of steel are recognizing the value of propane for cutting. The value of Hackney cylinders for the storage and transportation of propane-butane has been recognized for years. Today, Hackney cylinders are assuring dependability and long life in many wartime L-P Gas applications.

Hackney Propane-Butane cylinders provide time-tested dependability and satisfactory performance. They are engineered to meet the requirements in the transportation of LP-Gas from producer or distributor to user. The Hackney Process of cold drawing assures uniform sidewall thickness and, further, is a test of the quality of the steel itself. In the design and construction of Hackney LP-Gas cylinders, there is only a single body weld. Welding is X-ray controlled. Heat treatment of the finished cylinder assures continuous trouble-free service. Thus, there is no interruption in skill, knowledge, imagination, and Hackney's research in product improvement. These are continuing. You are assured that the qualities which have won a preference in the industry continue to be found in Hackney Cylinders.



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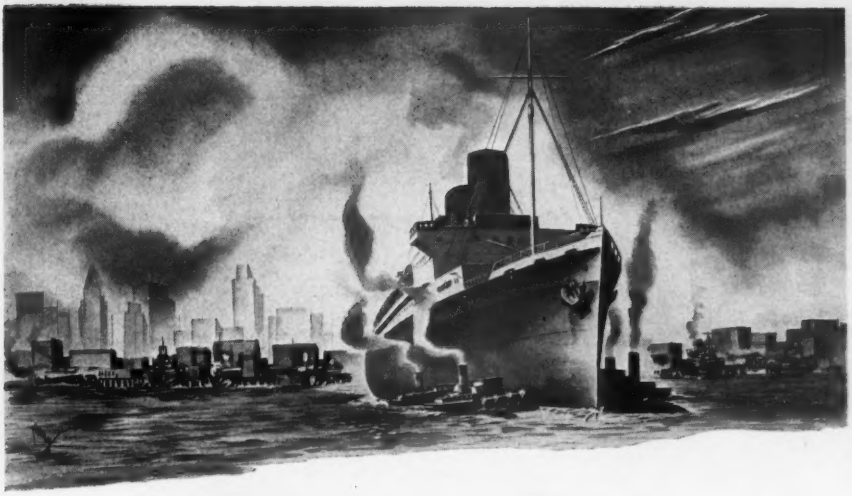

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Just as the huge liner depends on the team-work of tiny "tugs" to help make port, so is our service made possible by *your* "tugs", "lifts" and courtesies."

We appreciate the splendid cooperation of our many customers and by teamwork with them, Anchor continues to supply the highest grade Butane and Propane.

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BUTANE-PROPANE News

Reg. U. S. Pat. Off.

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LETTERS

Gentlemen:

One of our clients has a griddle operating on butane gas. There are four burners running length-wise of the griddle. Three of the burners operate normally. The fourth burner lights and the flame seems to blow away and then lights again from the other burner and then blows away again. We have adjusted the air, but it doesn't seem to make any difference.

We would like to know what causes the flame of this particular burner to operate this way and how could it be remedied?

D.T.

Montana

It sounds to us like this condition is being caused by the flame being starved for combustion air (secondary air), or it is possible that the flame is smothered by combustion products from the other burners.

Sometimes in conditions like these it is possible to remedy the trouble by boring holes in the sides or bottom or front of the burner compartment in order to admit additional air. —Ed.

•

Gentlemen:

In the August issue, 1942, of BUTANE-PROPANE *News* in The Bottled Gas Manual—Chapter 13—"Making Appliance Conversions," by C. C. Turner, is mentioned "MTD" drills for drilling orifices.

I would like to know just what kind of drills these MTD drills are and where they can be obtained. That is, the manufacturer who makes them or a jobber in our vicinity who would handle this type of drills.

Also, I would like to know if the Bottled Gas Manual is published in a complete manual form or not. If so and copies are available, at what cost?

Also, do you have left any of of the WBP Gas Flow Orifice Calculators and what is the current price?

W. B. B.

Indiana

"MTD" stands for "Morse Twist Drill" and before the war these drills could frequently be obtained from hardware stores throughout the country. It is possible you can find them in your city. If not, I suggest you write to Anderson & Forrester, 3563 Larimer St., Denver, Colo., who are manufacturers of such drills.

The Bottled Gas Manual by C. C. Turner which is running serially in BUTANE-PROPANE *News* will be published in book form a little later but it is not so available now. There will be 24 chapters to this Manual series and we have just now published Chapter 19.

Yes, you can obtain the Gas Flow Orifice Calculators from us yet. They are $1 each.—Ed.

•

Gentlemen:

I am a subscriber to your magazine and as such am going to take the liberty of asking you a few questions.

(1) What pounds pressure (gage, atmospheric) does a 100 lb. bottle of propane gas exert on the inlet side of the regulator?

(2) Same for a bottle of butane?

(3) What is the most satisfactory inlet pressure setting for a bottle gas range?

Would it be possible to obtain a cut or print showing a typical bottle gas plant set up. By that I mean steps of operation and what takes place from the tank car to the actual bottle filling. If you can't furnish me with it

I would appreciate your referring me to anyone who can.

Please refer me to any company that manufactures bottle gas scales.

A. D. P.

Minnesota

We are pleased to give you the following information upon your questions:

(1) The pressure of liquefied petroleum gases is the same on the vessels which contain them, or equipment used in connection therewith, regardless of their size. That which determines the variation of pressure is the atmospheric temperature or any artificial application of heat. Therefore, the pressure of propane gas on the inlet side of the regulator would be in direct relation to the atmospheric temperature. At 40° F. the gage pressure would be 63.3 lb. per sq. in.; at 60° 92.4 lb. per sq. in.: at 80° 128.1 lb. per sq. in.

(2) As the boiling point of butane is appproximately 32° above zero compared with 44° below zero for propane, its gage pressure at 60° is 11.6 lb. per sq. in.; at 70° 16.9 lb. per sq. in. and at 80° 22.9 lb. per sq. in. These pressures are taken from tables of Thermodynamic properties of liquefied petroleum gases as found in Handbook BUTANE-PROPANE Gases (published by us) and pressures are given for many temperatures both below and above those quoted.

(3) In regard to the most satisfactory inlet pressure setting for a bottled gas range, we quote you from Page 193 of the above named Handbook: "Liquefied Petroleum Gases are supplied to the manifold of the domestic appliances at a normal pressure of 10 to 12 in. equivalent water column. The American Standard Approval Requirements for domestic gas appliances, under which gas appliances are approved specify a test pressure of 11 in. for these gases. Fixed orifices are also required on appliances utilizing that. It is; therefore, important that all liquefied petroleum gas appliances be provided with fixed orifices of the proper size to deliver the rated gas input to each burner at this pressure."

In regard to plans for a bottled plant set-up, we suggest you write to some of the advertisers in BUTANE-PROPANE *News* who furnish equipment for such plants and if you want engineering advice or suggestions it is quite possible that your fuel supplier can give you all the information necessary. It may be that you would like to contact the Northwestern Blaugas Company in St. Paul or the Home Gas Company in Minneapolis, both of which are large distributors in Minnesota.

There are no special scales manufactured for the bottled gas industry and all standard scales are usable.—Ed.

Gentlemen:

We are very desirous of obtaining information on fortifying or enriching water gas with pulverized coal.

Any information you can give us on this subject, or tell us where it can be obtained, will be greatly appreciated.

V. P.

Illinois

We have no information on the subject of fortifying or enriching water gas with pulverized coal but suggest that you send an inquiry to the American Gas Association, 320 Lexington Ave., New York City.—Ed.

•

Gentlemen:

Can you give us the name and address of someone who manufactures or markets a weed burner that operates on butane? Are they successful?

C. L. W.

Arizona

Weed burners which use butane as fuel may be had through the Ransome Co., 4030 Hollis St., Emeryville, Calif.

The Butane Corp., Heard Bldg., Phoenix, Ariz., has furnished some of its clients with fuel for weed burners and operating records can be had from that firm.

The Pacific Electric Co., Los Angeles, also uses butane weed burners.—Ed.

•

Gentlemen:

It was with a good deal of pride and satisfaction that I read your account of my Hydro Gas activities, in your February issue of the BUTANE-PROPANE *News*.

May I take this means of thanking you for this recognition.

R. M. Wright.

Kerrville, Texas

We think your operations deserved the news story given and, in turn, appreciate your letter of approval.—Ed.

•

• **BUTANE-PROPANE *News* welcomes letters from our readers, but it must be understood that this magazine does not necessarily concur in opinions expressed.—Editor.**

TALLENT H. RANSOME

Guest Editor for June

War Profits

By TALLENT H. RANSOME
Vice President, Ransome Company, Emeryville, California

AT the 1942 meeting of the Pacific Coast Section of the Liquefied Petroleum Gas Association a real spirit of gloom prevailed. Many thought their days numbered.

Present restricted operations have forced us to realize that it is greatly to our advantage to continue the careful operation of trucks, the close watch on costs, the sounder credit methods, and consolidation of our business within natural boundaries from central distributing points. Now, a year since that meeting, our industry is still intact and, to the best of our knowledge, the distributors who took advantage of these practices are now in stronger positions.

Free advertising should be listed as our greatest War Profit. The use of liquefied petroleum gas by the Army, Navy, and defense industries has brought this product before a trained personnel who have of a necessity found many new uses for it, and who will demand it for these uses after the war is won. Besides this, hundreds of thousands of war workers were moved from one location to another and forced to use liquefied petroleum gas as a substitute fuel for heating and cooking purposes. When these consumers return to their home states and communities they will replace their former less convenient fuels because they have experienced the great advantages of LP-Gas.

Due to the many restrictions, and lack of necessary equipment there has been and can be no active solicitation of new business at present. However, we can and should build up a large backlog of postwar business, by the manner in which we handle the probable new accounts. Like the elephant, man has a good memory for kind treatment, even though his present wants cannot be satisfied. This care and consideration of those who are only probable customers is but one phase of sounder business methods.

Our industry has grown rapidly and developed various methods and practices in different areas, some good, some bad. In order to survive post-war competition with public utilities it will not only be necessary to practice the lessons learned from war days, but we should have an exchange of the better practices so that we can survive and prosper.

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Write at once for Bulletin 42-D! It fully describes and prices all Fisher L P G Regulators!

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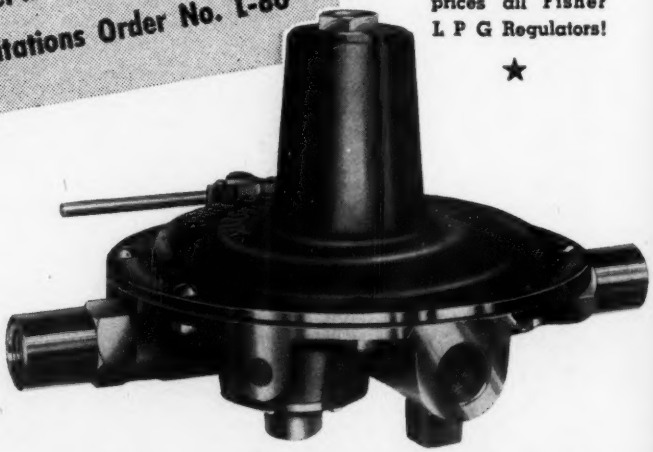

FISHER SERIES 741A REGULATOR

This two-drum manual throw-over Regulator, after years of use by the major bottled gas manufacturers, is considered the most superior type of regulator available today. It has ample capacity for any domestic or commercial installation. Incorporates built-in safety relief valve. Operation is extremely simple — tight shut off prevents leakage of gas when empty cylinder is disconnected. Many outstanding engineering features make the Fisher Type 741A your logical choice for two-drum installations.

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949 Fisher Bldg., MARSHALLTOWN, IOWA

MAINLY BEYOND THE MAINS

By ELLIOTT TAYLOR, Washington Editor

The Month

The transfer of jurisdiction over the LP-Gas industry from the Plumbing and Heating Branch of WPB to the offices of the Petroleum Administrator for War is a step in the right direction and one that we have long advocated as inevitable if the best interests of both the industry and the war program were to be served.

This desirable move, which it should be understood was accomplished in a spirit of perfect accord between the two agencies, at once raises the status of LP-Gas from that of a minor fuel to a position on a par with the two other great hydrocarbon groups with which it is so intimately associated, natural gas and natural gasoline. On the organization chart of the Natural Gas and Natural Gasoline Division of PAW there are but three major sections, one of which is the newly formed LP-Gas Section, headed by Paul K. Thompson who brought his entire personnel over from WPB to PAW. Thus for the first time all of the authority over the industry is centered in one agency, which is staffed from bottom to top with experienced natural gas, natural gasoline and LP-Gas men.

This in our opinion is the best break the industry has had since January, 1942, when order M-68-c was thrown across the path of its phenomenal progress. But the use to which the opportunity presented will be put will depend now to a greater degree than even before on the intelligent and complete cooperation of the industry. This cooperation implies not only working with the PAW, but working together within the industry.

The short lived LP-Gas Industry Committee to WPB, which was formed only a few weeks before the transfer over to PAW has been disbanded. This is in no sense a reflection on the competence or the ability of the committee to discharge its functions. On the contrary the quick study that was made of the transportation situation during its tenure is regarded in PAW as a valuable contribution to its operating data.

To bring LP-Gas within the framework of established and successful PAW organization now requires that five district sub-committees on LP-Gas be appointed to replace the one national committee that functioned under WPB. There already exists in each of these districts a Natural Gas and Natural Gasoline

Committee. The chairmen of the five newly formed LP-Gas committees will each become automatically a member of this established committee. But the activities of the district committees of LP-Gas men will not be subordinate to those of the Natural Gas and Natural Gasoline Committees except in matters of purely local jurisdiction. Direct contact with the LP-Gas Section of the Natural Gas and Natural Gasoline Division in Washington will be maintained through the five district subcommittee chairmen.

To appreciate fully the method of operation of PAW, and to anticipate its effect on LP-Gas, one must bear in mind the PAW is probably the most democratically organized and administered agency in Washington. From the outset Administrator Ickes has taken the position that the men most competent to get the maximum of achievement from any industry are the men who have demonstrated their ability first within that industry. He has also publicly stated on numerous occasions that no group is to be given a position of competitive advantage over any other groups as a result of war time restrictions.

To any members of this industry who have had misgivings lest the interests of LP-Gas be subordinated in the district committees set up, to those of natural gas, natural gasoline or the public utilities, we offer for what it is worth our studied opinion that such apprehensions are entirely ungrounded. On LP-Gas matters the recommendations of LP-Gas men will be taken as the authorative voice of the industry and will be treated as such.

As first indication of the democratic procedure under which PAW will enlist industry cooperation, is the invitation to all operators in the United States, regardless of the volume or character of their butane or propane business, to submit nominations for the selection of personnel to constitute the district LP-Gas committees. Every operator is entitled to submit by letter the names of six candidates for committee appointment for the district, or for each district, in which he operates. Final selections will then be made by PAW officials.

Members of the Liquefied Petroleum Gas Association have already been informed of this invitation in a letter dated May 18. In reply to a specific inquiry we are advised by the Director of the Natural Gas and Natural Gasoline Division, E. Holley Poe, that this invitation is not restricted to members of the LPGA, and that it is the hope and expectation of the Division that nominations will be forthcoming from non-association operators as well as organization members.

We believe that an early and widespread response to this invitation will serve as an indication to PAW of industry co-

operation and endorsement of the transfer of jurisdiction from WPB, and will insure in the final selection a complement of truly representative committees.

Headache

Having developed over a period of years a profound admiration for any man, group, committee or rump session that opens its eyes to the facts of life and still heads determinedly down the hard way, we have nothing but respect for the brave little band in the LPGA which believes that the best way to broaden the scope and enhance the interest in that organization would be through the establishing of an association-owned-and-controlled trade magazine.

We have consistently maintained, and often in the face of considerable formidable opposition, that the LPGA could do the greatest good to the greatest number of operators by making membership in the association attractive to even the littlest operator in the LP-Gas industry. If a new magazine thrown in as a bonus to association membership will do the trick, we are all for the new magazine.

But unfortunately there is more to the founding of a publication than the ecstatic enthusiasm for its insemination than the palpitating potential progenitors sometimes forsee. For instance, it takes about 1200 words to fill up one magazine page, 7 x 10 in. type size; and allowing 30% off for heads, captions and mugs, this means over 27,000 words for one 32-page issue once every month, 12 times every year. And 324,000 words per annum, for free, is a large quota for any publisher to shoot at, whether his motive be the high altruism of organization endeavor or the pursuit of private profits. Now it might be argued that the projected publication would pay its own way by subsidizing space writers, with the necessary potatoes coming out of paid advertising.

After 1945, at which time we will of course have smacked the living daylights out of the Axis, it will be entirely conceivable that such a program may have both plausibility and possibilities. But until that happy day, we believe, and have verified by direct inquiry to the War Production Board, that WPB order L-244, effective March 26 last, closes the books on any ideas for a new magazine by any publisher using 25 tons or less of paper per annum during 1942. Under these circumstances we give it as our reluctant advice to the self-styled publication committee of the LPGA, that they have only to wait until the war is won to launch their new membership promotion incentive; at which time, all other things being equal, we will be happy to pass on the few tricks of the trade that we have acquired to those whose interests coincide with ours—bigger and better trade magazines.

Control Of LP-Gas Industry Transferred to PAW from WPB

FORMATION of a Liquefied Petroleum Gas Section in the Division of Natural Gas and Natural Gasolines was announced May 3 by Petroleum Administrator for War, Harold L. Ickes.

P. K. THOMPSON

Headed by Paul K. Thompson, the personnel of the section was transferred without change from the War Production Board, where the handling of distribution problems of liquefied petroleum gases came under the jurisdiction of WPB's Plumbing and Heating Division.

Details of the transfer to PAW were arranged by War Production Board Chairman Donald Nelson and Deputy Petroleum Administrator Ralph K. Davies.

The section continues the functions for which it was responsible in the WPB, principally the administration of WPB's Limitation Order L-86 which regulates the installation of liquefied petroleum gas equipment.

Liquefied petroleum gases affected by the L-86 order are butane, propane and mixtures of these two hydrocarbons, which are used as fuel in many war plants and in homes.

A sharp increase in consumption, plus difficulty transporting the high-pressure gases to consuming areas, has made it necessary to regulate the further expansion of the use of liquefied petroleum gases.

Mr. Davies said that, to assure proper coordination with the liquefied petroleum gas program of other agencies, the PAW section will work closely with WPB industry divisions, the industry, state regulatory agencies, and other Federal agencies concerned.

How to Get Exemptions

Requests for exemptions to the L-86 order and any other correspondence written in connection with the administration of L-86 should be addressed to Section of Liquefied Petroleum Gases, Division of Natural Gas and Natural Gasolines, Petroleum Administration for War, Interior Building, Washington, D. C. Ref: L-86.

One of the first problems facing the PAW is the readjustment of Advisory Committees to conform to the pattern established by that agency for the petroleum industry and for the natural gas and natural gasoline industry. This means that the LP-Gas industry advisory committee to WPB, recently established, will cease to exist and that new committees will have to be

established. The plan to be followed by PAW will be the same as that presently used for the other industries within its jurisdiction.

Briefly, the plan of organization is as follows: The United States is divided into five districts, (1) East Coast, (2) Midwest, (3) Gulf Coast, (4) Rocky Mountain States, (5) Pacific Coast. In each of these districts there is a committee representing the natural gas and natural gasoline industry. It is now proposed that an LP-Gas sub-committee be added. This sub-committee will consist of five members and a chairman. The chairman of the sub-committee will become a member of the natural gas and natural gasoline district committee. Direct contact with the LP-Gas Section of the Natural Gas and Natural Gasoline Division in Washington will be maintained through the five district sub-committee chairmen.

Submit Your Nominations

The members of the LP-Gas industry are notified of the method of selection of personnel to constitute the several district sub-committees. Every member is entitled to submit nominations. The members of the five LP-Gas district sub-committees will be appointed by the PAW. Every member is entitled to submit by letter, the names of not more than six candidates for appointment to the sub-committee for the district or districts in which he is engaged.

Send your nominations by letter to reach E. Holley Poe, Director, Natural Gas & Natural Gasoline Division, PAW, Washington, D.C., by June 10.

Stove Rationing Begins June 15

RATIONING of the nation's new cooking and heating stoves burning gas, oil, coal, and wood is scheduled to begin June 15, according to an announcement May 19 by the Office of Price Administration. It is estimated that American factories will produce such stoves at the rate of 3,500,000 units per year.

Those who need cooking or heating stoves may apply to OPA ration boards in June. Applicants must show that the stove will be used in essential living or working quarters, that the present stove is worn beyond repair, or that they have no stove and that no stove has been disposed of within 60 days.

Production of new cooking and heating stoves in 1940-41, a normal year, was 8,600,000.

While no definite word has come from WPB on amendments to Order L-23-c which would allow resumption of production of stoves by manufacturers restricted last July, it is rumored some action will come soon.

While some victory model stoves have been produced by smaller manufacturers located in non-labor shortage areas, it is not generally conceded that their production has been in volume to care adequately for the nation's needs under the rationing program. It is likely that the production restrictions will be lifted to allow certain manufacturers strategically located to resume production of one of their regular models stripped of accessories.

It is thought also that steps will be taken towards resumption of the production of water heaters, and that a rationing program for this appliance will shortly be put in effect.

Butane-Air Meets Emergency In Manufactured Gas Plant

By C. E. LASHER
Manager, Washington Gas and Electric Company, Everett, Washington

OPERATIONS of small and medium-sized manufactured gas companies have been hard hit by conditions resulting from factors arising from world war activities. We are one in this class and the future will be the judge of our decisions.

C. E. LASHER

The question of the manufacture of gas for sendouts averaging under 200,000 cu. ft. per day of approximately 500 Btu. gas entails many problems that cause the operators to seek out the "bugs" and try to find a solution of the problems. Several factors affecting costs follow:

1. Age of the plant and its immediate requirements for rehabilitation with more efficient gas-making apparatus.
2. Trend of fuel costs.
3. In small plants the costs per thousand for labor increases greatly as the wage scale goes up.
4. Inability to get complete recovery of residuals.

At Everett, Wash., we had a carburetted water gas plant which was installed in 1911 and, due to its age, the water gas sets were both obsolete, and the shells of the generators were in bad shape. The sets were entirely hand operated; thus, even if they were in good repair, the efficiency would be very poor.

We also had the question of a major repair to our storage holder if we were to use the two lifts to an operating advantage.

The costs of both coal and oil were increasing, and also there was the other problem of obtaining satisfactory coal.

The labor problem was becoming acute, as our plant could make this gas in 8 to 10 hours and the bal-

• When the management of the Washington Gas and Electric Co. found itself confronted with a need for rehabilitating its manufactured gas plant and for more gas-making apparatus; when it encountered rising labor and fuel costs, and even the quality of obtainable coal was lowered, it turned to butane-air.

The experiences of similar companies were sought and an installation made. Operations to date have been highly satisfactory, but Manager Lasher seeks more knowledge of current operating practices and requests that comments be made on his company's existing methods by those in a position to pass judgement.

Any suggestions by operators of central plants may be made to Mr. Lasher or conveyed to BUTANE-PROPANE *News* in a form suitable for publication so that others, interested in this subject, may benefit from such additional information.—Editor.

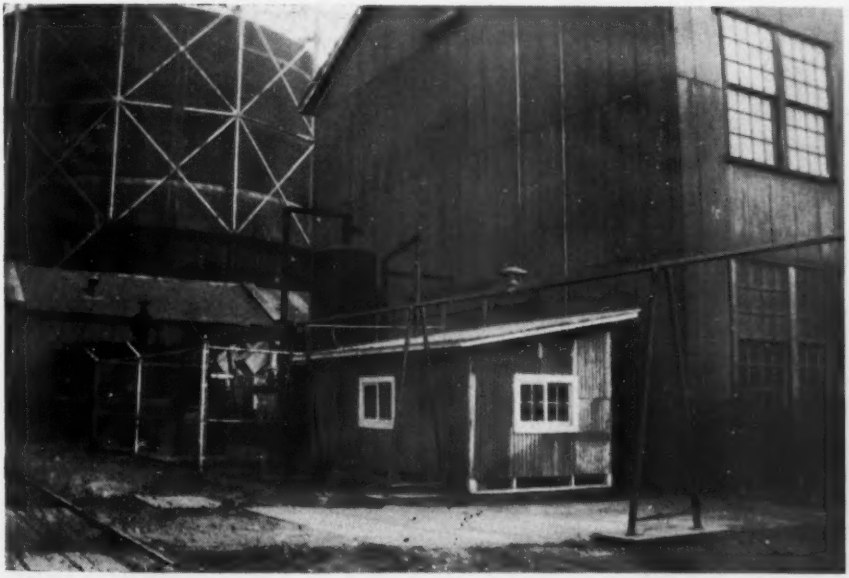
ance of the labor was standby, so as the wage rate went up the cost of labor per thousand went up in almost a geometric ratio. The quality of labor was decreasing, as we are in a defense area where war industries were offering premium wage scales.

The problem of peak loads due to cold weather hits us hard, for with a two-shift operation extra labor for clinkering is required and extra boiler fuel for steam for the holders.

In large plants it is possible to recover not only tar, but by distilling and fractionating many valuable by-products are recovered. Here at Everett we could recover the tar, and by distillation only, we obtained a distillate or "light oil," and for these two residuals we had a fair market which would reduce our cost of gas approximately three cents per thousand. In the large plants the by-products produce several times this amount.

With these factors in mind, the company considered the case from many angles in 1940 and in June, 1941, decided to install a butane-air gas plant. Then came the questions of at what Btu. to operate and what effect it would have upon our consumers' appliances and our systems.

Correspondence was had with several butane-air gas operating



The gas-airs are enclosed in the wire fence shown here. In front of them is the building that houses the auxiliary steam compressor. The 2-in. liquid butane pipe leading from the storage tanks to the gas-airs can be seen through the center of the picture. This line is supported by "A" frames set in concrete piers.

PLANT LAYOUT OF WASHINGTON GAS AND ELECTRIC CO.

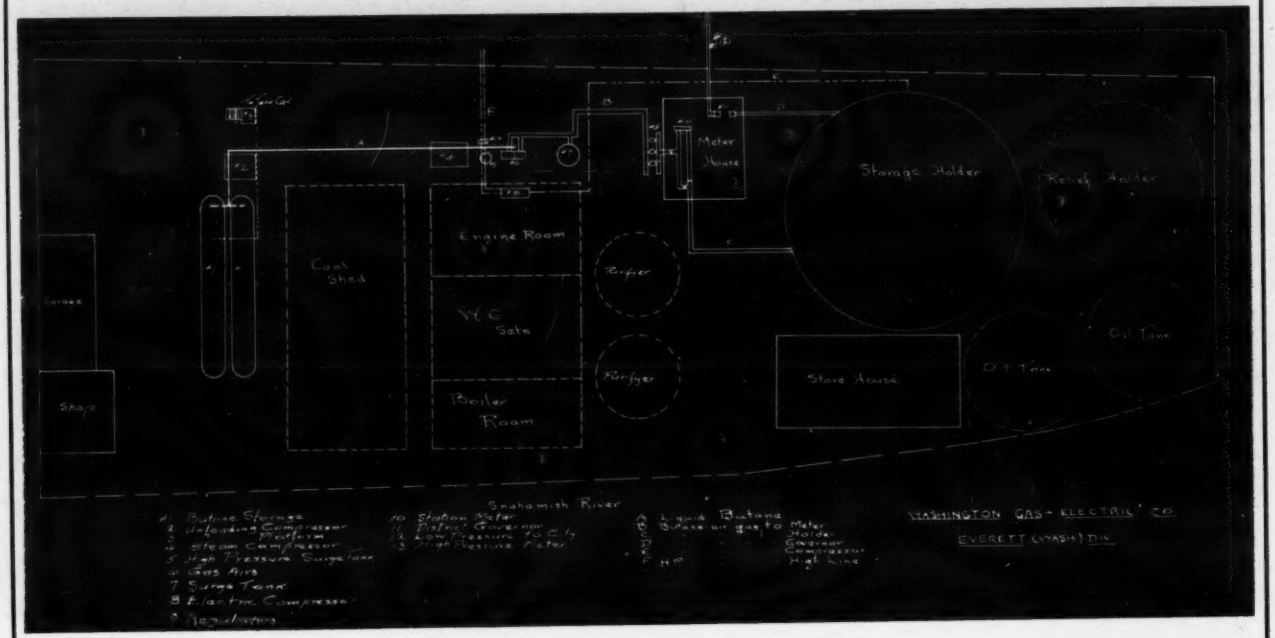


Fig. 1. Buildings and tanks outlined in broken lines are those used in water gas operation, but not used with butane-air gas.

companies, but most of them were serving 300 to 500 customers with a distribution system operating at from 2 to 15 lbs. per sq. in. pressure.

Here at Everett we have over 2000 users, a low pressure system of 48 miles of mains operating at 4-in. water column pressure, and a medium high pressure system of 19 miles of mains operating at 10 to 20 lbs. per sq. in. pressure.

Higher Btu. Gas Found Best

We found that companies operating at 8-in. to 10-in. water column pressure on consumers' equipment apparently get along fairly well with 500 to 550 Btu. butane-air gas. We could not get this pressure without holder problems, so we started with the premise of 5-in. water column pressure for the low pressure systems, and we experimented with our appliances and found that 1000 Btu. butane-air gas would give us fewer problems.

We don't say that the standard we set is correct, but the limited information, our own theories and actual operating results lead us to believe that we hit a fairly good standard.

Then comes the factor of unaccounted-for gas. Increasing Btu. from 500 to 1000 meant that actually our cost of unaccounted-for would double if no change in cubic foot cost occurred. Also, with increase of Btu. our sales of cubic feet of gas should theoretically be cut in two, and with cubic feet of unaccounted-for remaining the same, the percentage of unaccounted-for would be very much higher, and that actually is the case.

As we had over 2000 users and manpower was limited, we decided to sectionalize the low pressure distribution system into four districts, so that we could clean up one section at a time and also so that we would try to hold to a minimum the inconvenience of the changeover to the customer. We installed 37 valves and six reducing valves, and first we changed over the high pressure system and used it as a feed to the low pressure sections.

At the plant we knew that we had to keep the old plant going until all of the sections were cut over, so in the layout of the butane-air gas plant we were restricted by available ground space and by reference to Fig. 1 it can be seen how we (so-to-speak) built the new plant around the old plant.

Guarded Against High Water

All of the piping from the new plant is aboveground and above any recorded high water, as the plant is located on the bank of the Snohomish river. All equipment was installed with the idea of accessibility for service and repairs. As a result, we feel that we accomplished these features and think that time will prove that our layout is good.

We feel that with our sendout of better than 150,000 cu. ft. of 1000 Btu. gas per day that the storage of liquid butane is too small. We have two 16,400 gal. (water capacity) tanks, which means a maximum of less than 30,000 gal. of butane. Butane is received from California in tank cars with a transportation time of 7 to 12 days, so that at

times we have been too low with butane on hand. However, connections are provided for a third tank when and if we can get it.

We have but one L. C. Roney unloading compressor, and as we are a long way from a supply of parts, good judgment would indicate that another pump is desirable.

We have installed two 10,000 Btu. Gasair Corp. gas-air machines with connections for two more when needed.

The procedure of handling butane from tank car to holder is that we have our own siding and discharge contents of tank car to either tank, then by pressure on the tank send the liquid butane to the gas-air machines.

The finished butane-air gas from the machines is at a pressure of approximately 2 lbs. per sq. in., and in order to feed in the holder without too much trouble we reduce the pressure to 11 in. water column. After the regulators is our station meter. Then the gas goes to the holder, out to the low pressure district governor, which is set at 5 in. water column.

The Hook-Up During Changeover

Also from the holder is another pipe which leads to the compressor that supplies the high pressure line. This compressor has an auxiliary connection to the surge tank so that it can be operated independently of the holder. This was the hook-up we used when we were making the changeover. Water gas was supplied to the holder; butane-air gas to the compressor. The holder supplied the section not cut over and the high pressure line supplied the sections cut over or being cut over.

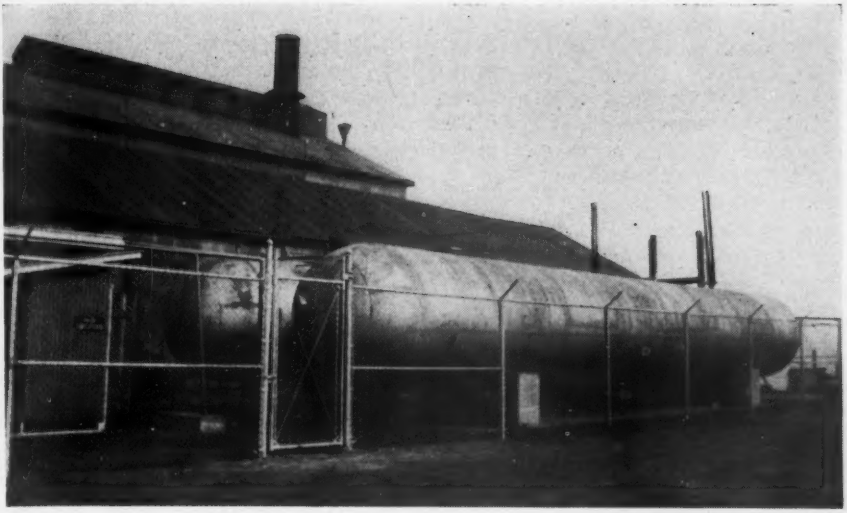
The plant has been in operation since last August, and while it is supposed to be automatic, we feel that with our volume it is wise to have a man at the plant while the gas-airs are operating. For if a diaphragm gives out or a "lock-out" occurs, the sendout gas is protected by someone being there to correct the trouble.

The Unaccounted-For Went Up

The unaccounted-for went up as predicted, plus problems of breaks, small leaks, and drying out of packings on valve stems on the high pressure line. We have far to go to get the unaccounted-for down where it should be, and we are working hard on the problem.

We have operated through one winter with a prolonged cold snap. Due to the increased temperature of the gas, we did not have too much problem with the holder water except that at the peak of the cold snap, which came in less than 24 hours, we did not get steam up quickly enough to prevent ice forming. By next winter we hope to have a smaller capacity boiler or circulating pump that wlll give us the flexibility desired. The gas-airs operated good, and with the increased sendout it simply meant extra hours of operation but no change in labor. The restriction in capacity of butane storage, plus railroad delays beyond control, did cause us considerable uneasiness.

Problems on Utilization. We found that many of the very old



These are the two liquid butane tanks already installed. Arrangements are being made for a third tank.

style ranges converted over to the new gas by reducing the orifice and opening up the air shutter, and it is obsolutely necessary to drill all burner ports.

Some of the newer makes change over very readily, but one well known make is still a trouble-breeder.

Tank water heaters, by raising the burners, operate good.

In the automatic water heaters we installed 100% cutoffs and our perience proves they are necessary.

Most radiant heaters had to be replaced.

In unit heaters, one make was very easy to change; another make means quite a job.

For one make of ranges in restaurants, hotels and hospitals, we found it necessary to replace top burners. Biggest complaint: new gas too hot. Easily taken care of.

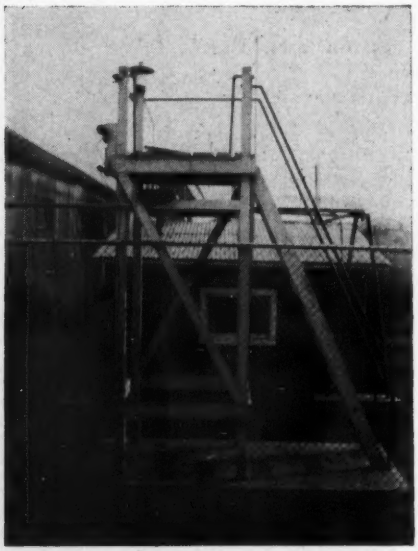
Industrial; cut and try and we feel that we did a good job.

As to final results, due to the drilling of all ports, and cleaning out of burners, many appliances are giving better service than ever, due to the fact that it is probably the first time in years that many of the stoves were really cleaned up.

Procedure of Changeover. First we made a survey of all customers' equipment, listing make, size, type of burners, etc., on special cards. Then we tabulated parts and equipment needed, which was ordered. Prior to the changeover we had an article in the paper giving the reasons for the changeover and asking for cooperation. Three days before touching a section we sent customers notices. The night prior we inserted an "ad" advising the

district. The day gas was turned on we had men go to each customer and make a hurried adjustment. If no one was home, a red card was left. Then the crew started systematically to drill ports and make gas and air adjustments, for by that time the butane-air had saturated the section. We found that the vast majority of the customers were very considerate and many even apologized for not being at home when our men called.

We were fortunate in making the changeover when we did, as people were becoming accustomed to restrictions of various sorts, and the publicity from the articles and advertisements helped us out tremendously.



The platform used for connecting the tank cars to the pipe lines. Just back of this platform and on the same level is a covered trough for storing the flexible hoses when not in use.

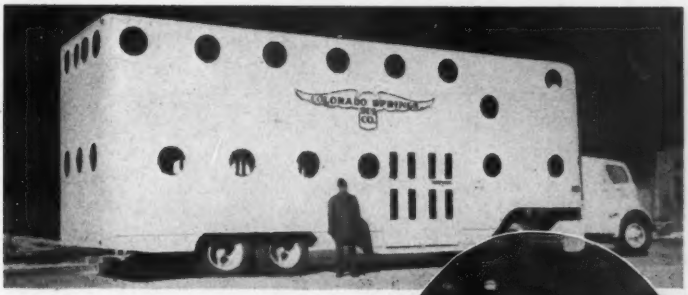
We held off the downtown section till last and turned on the butane-air gas on a Saturday night. The crews worked all Saturday night and Sunday, and by Monday we had everything under control.

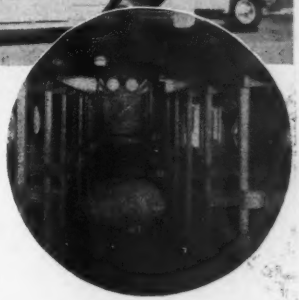
We have had very few complaints over high bills, and those were where there were tank water heaters and the burners had not been raised. Our faults were primarily due to over-adjustment of burners, and when it is considered that we used quite a few inexperienced men we feel that we accomplished a good job.

Our suggestion to others contemplating a changeover is that before going ahead with definite plans, it is worth while to get a man with experience to lay out plans for plant and procedure for consumer change. Whatever it costs will be more than justified in results.

A great deal of information is needed concerning actual operation of butane-air gas. Most of that which is available is either purely theoretical or else rule of thumb. This applies to both the plant and the utilization of the product.

Our plant has been in operation about 10 months and we feel operating results have met our anticipations. The changing of consumers' equipment was accomplished with a minimum of trouble to both the consumer and the company. We are hopeful that after the war transportation costs will be materially reduced, for the cost of butane in our storage tanks is nearly 90% of our holder cost of gas.





Interior of bus.

Butane Floor Furnace Heats Army Bus

BELIEVED to be the biggest bus in the world—built of scrap iron and wood—is now in service transporting soldiers from barracks to main gate of huge Camp Carson, Colorado Springs, Colo. This monster is a double-decker, 15 ft. wide, 10 ft. high and 45 ft. long—capacity 260 soldiers. A White tractor is the motive power.

The bus was designed by Dean Gillespie, Denver engineer, at the request of camp authorities for something to solve the critical problem of moving men around the mammoth camp. It was costructed in 90 days and a second immediately started. Even the 14 tires are second hand.

One of the most interesting features of this land "Leviathan" is the heating system—a Payne floor furnace, using butane gas, and manufactured by the Payne Furnace & Supply Co., Inc., Beverly Hills, Calif.

In the often nippy weather, Camp Carson soldiers genuinely appreciate the warmth afforded by this unique furnace installation.

The sale and installation of the Payneheat equipment for this bus was made by the Industrial Gas Department under the supervision of F. M. Chelf, of the Public Service Co. of Colorado.

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Government War Agencies Determine Upon "War Model"

The phrase "War Model" has been determined upon by Government war agencies to indicate specified models of commodities designed to provide the greatest war-time serviceability at given price levels with the smallest drain upon manpower, critical materials, plant and transportation facilities.

The use of this term, "war model," will be reserved to describe commodities which meet the requirements of manufacture and price regulations which have been covered by government directives.

SOUTHERN SECTION CONVENTIONITES

TOP: L. L. Peters, American Stove Co.; W. A. Naumer, Carbide and Carbon Chemicals Corp.; A. N. Kerr, Imperial Gas Co. CENTER: Paul R. Smith, Anchor Petroleum Co.; Emily Benator, Atlanta; Roy Weinman, Servel, Inc. BOTTOM: A. J. Lawler, Southern Gas & Electric Corp.; Gene McDonald, Servel, Inc.; J. P. Dockery.

K. H. Koach, Green's Fuel, Inc., retiring chairman of Southern Section; W. S. Christopher, Georgia Butane Gas Co., director of convention arrangements, and Louis Abramson, Jr., Petrolane Gas Corp., new president of the national LPGA.

Dehydration of Fresh Foods With LP-Gas Offers New Load, Southern Section Told

THAT dehydration of home grown fruits and vegetables, practically a virgin field in the liquefied petroleum gas industry, opens a new source of load to dealers throughout the country and has a remarkable opportunity to contribute substantially to the efforts of the government to relieve present food shortages everywhere, was the substance of a talk delivered to members of the Southern Section, LPGA, at the Atlanta, Ga., convention April 30-May 1 by L. L. Peters, of the Atlanta office of the American Stove Co. The title of his discussion was "Dehydrated Foods from the Gas Cooking Angle."

The widespread planting of Victory gardens and stringent rationing of canned vegetables and fruits is certain to popularize this movement, Mr. Peters thinks. Once in the habit, American housewives will be inclined to continue the practice after the war. The commercial potentialities are believed to be large, too.

By JAY JENKINS
Publisher, BUTANE-PROPANE *News*

There are four accredited methods of preservation of fresh foods as follows: 1, dry storage; 2, canning; 3, frozen storage; 4, dehydration. Dehydration consists of removing 90% of the moisture through heat. It can be done on the top burner or in the oven of a gas range.

Upwards of 150 members of the LP-Gas industry traveled to the Southern Section meeting in spite of the difficulties of obtaining railroad and hotel accommodations to hear discussions of current problems and to select new leaders for the Section for the coming year. H. C. Pittman, of the Automatic Gas Co., Tyler, Texas, was elected chairman, succeeding K. H. Koach, Green's Fuel, Inc., Sarasota, Fla. New vice chairmen are: Selwyn Turner, National Butane Gas Co., Mobile, Ala.; W. C. Christopher, Georgia Automatic Gas Co., Atlanta, Ga., who had charge of the arrange-

Hermann Paris, Georgia Butane Gas Co.; H. Emerson Thomas, Fisher Governor Co., and H. C. Pittman, Automatic Gas Co., Inc., new chairman of Southern Section.

ments for the present convention; and B. T. Harris, Butane Gas Co., Inc., Little Rock, Ark. J. R. Herrin, Jr., Coastal Butane Co., Summerville, S. C., was elected secretary.

Luncheon speakers were Frank Boice, Shell Oil Co., Inc., New York City, and E. Carl Sorby, Geo. D. Roper Corp., Rockford, Ill., who discussed future plans of the advertising committee of the national association. Mr. Boice also appeared upon the regular program, his subject being, "After the War, What?" A. N. Kerr, Imperial Gas Co., Los Angeles, one of the earliest pioneers in the LP-Gas industry, was the featured speaker at the dinner following the first day's session. He told of early day practices and experiences.

Louis Abramson, Jr., Petrolane Gas Corp., New Orleans, and newly elected president of the national LPGA, reported on the recent work of the Technical and Standards Committee of the parent organization. He took occasion to stress the importance of cooperation with the national association and reminded members of the splendid work the association had

S. A. Melton, Melton's Dockson Gas Co.; E. S. Sedlachek, Scaife Co.; W. S. Lander, Rulane Gas Co., and Wilson Milligan, Smith Meter Co.

R F. Foster, Lone Star Gas Co.; J. R. Holicer, Holicer Gas Co., Inc.; Mary Suttles, Atlanta, and John W. Birdsong, Butane Gas Co. of Mississippi.

been able to do with various officials in Washington because they were speaking with united voice. He particularly mentioned the tank car problem and securing permission from Washington to use other types of tank cars to bridge the shortage in transportation facilities.

W. A. Naumer, Carbide and Carbon Chemicals Corp., New York City, discussed, "Safety Under Wartime Conditions," and stated that Pamphlet 58 of the National Board of Fire Underwriters was being revised to add two new chapters. One will pertain to all phases of storage; the other will be devoted to installation and piping problems. He also reported on the activities of the WPB Industry Advisory Committee, of which he is a member.

"Government Regulations for the Liquefied Petroleum Gas Industry" was the subject of a talk by Paul K. Thompson, Chief of the Liquefied Petroleum Gas Equipment Unit of the Plumbing and Heating Division, War Production Board, Washington, D. C. (since transferred to the Petroluem Administration for War).

Other speakers at the meeting and their subjects were: Dr. James G. Johnson, Regional Director of Wage and Hour Division, War Labor Board, who discussed, "Salary and Wage Freezing Law;" and W. J. Keown, of Atlanta, Regional Director of the ODT, who explained the transportation situation as it exists today.

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Sale of Used Refrigerators Modified Under New Rules

Thousands of used refrigerators that have been held in dealers' stocks since May, 1942, are expected to be released to the public as a result of a new OPA regulation issued in March.

The new regulation liberalizes the guaranty provisions for used refrigerators, shortening the guaranty period to 90 days, and allows dealers to charge the same prices for these 90-day-guaranty models that they formerly charged for models guaranteed for a full year.

The purpose of this order, OPA said, is to assist dealers in repairing and selling used mechanical refrigerators. Shortages of manpower and materials have kept frozen in dealers' stocks many refrigerators that could otherwise be repaired and sold.

Nitrogen and Carbon Dioxide Used To Make Butadiene-Air Non-Explosive

CONTINUING its activities to safeguard life and property in mining and allied industries, the Bureau of Mines has published a report on experiments to aid the newly-established synthetic rubber industry in preventing explosions of butadiene and air mixtures, according to Dr. R. R. Sayers, director of the Bureau. The gas butadiene is a principal constituent for the manufacture of synthetic rubber.

Written by G. W. Jones and R. E. Kennedy, Bureau chemists, the report contains tables and graphs which show how much nitrogen and carbon dioxide must be added to make varying mixtures of butadiene and air non-explosive. The facts were obtained from tests in the Bureau's laboratory at Pittsburgh, Pa.

"This information is of special importance in safety work because, by its application, combustible mixtures containing butadiene can be removed safely from containers and equipment, or butadiene may be introduced into similar equipment originally containing air without creating inflammable atmosphere, if the proper amount of inert gases, nitrogen, or carbon dioxide are added to the mixtures when the butadiene is introduced," the report states.

The report said that the Bureau chemists were careful to choose experimental conditions which would give the widest limits of inflammability so that the results could be used in industries where large volumes of butadiene-air mixtures might be present.

Newly-developed testing procedures and apparatus, especially applicable for butadiene, air, nitrogen, and carbon dioxide mixtures, were used for the experiments. The percentage proportions of the gases were determined by partial pressure methods.

Summarizing the results, the authors state that if nitrogen is used to dilute the mixture, at least 19.6 volumes must be added to each volume of butadiene to render all mixtures non-inflammable with air. Only 12.1 volumes of carbon dioxide are required under similar conditions.

In previous publications, the Burau has presented data and described methods of calculating the inflammability of gases liberated by mine fires, explosives, automobiles, during mine explosions, and in the operation of blast-furnaces.

A copy of the report of investigations 3691, "The Prevention of Butadiene-Air Explosives by the Addition of Nitrogen and Carbon Dioxide," can be obtaianed free of charge from the Bureau of Mines, Department of the Interior, Washington, D. C.

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Crook Co., Los Angeles, Changes Firm Name

Crook Co., Los Angeles, has changed its name to California Butane Co., as of April 1. The operations of the company, owned by W. D. Crook, will not be changed and the address will remain 2900 Santa Fe Ave.

A. A. Bewley will continue to manage the butane department and George Brereton remains as chief engineer.

John L. Locke Elected Chairman of Midwest Section, LPGA

By C. C. TURNER

BUTANE-PROPANE *News* Staff Correspondent

JOHN L. LOCKE, president of the Northwestern Blaugas Co., St. Paul, is the new chairman of the Midwest Section, LPGA, elected at the May 13-14 meeting held in the Palmer House, Chicago. Mr. Locke's company dates back to its organization in 1909 and he, himself, has been active in the industry since 1925.

JOHN L. LOCKE

Other officers elected for the new term are J. Richard Verkamp, vice president of The Verkamp Corp., Cincinnati, vice chairman, and Lee Barker, president of Wisconsin Rapids Gas Co., Wisconsin Rapids, Wis., secretary.

A resolution was introduced at the meeting by G. L. Brennan, manager of the LP-Gas division, Warren Petroleum Corp., Tulsa, who headed a symposium on ways to improve the LPGA, recommending the following major changes in the structure of the national Liquefied Petroleum Gas Association:

1. Hiring a full-time secretary.

2. Moving the association headquarters from New York City to a more central location.

3. Arranging for an industry national advertising program.

4. Increasing association dues substantially to accomplish above ends.

The resolution further provided that Louis Abramson, Jr., national president, be asked to recommend that the Eastern and Pacific Coast Sections vote upon the same propositions at their impending meetings and that the results be conveyed to a committee to be appointed by Mr. Abramson for analyses and to make later recommendations to the board of the national association.

Good Crowd in Attendance

More than 150 members of the Midwest Section attended the Chicago meeting, welcomed by L. R. Forsyth, retiring chairman. He was followed by Mr. Abramson who spoke on the record of the association in the past year and what had been accomplished by the Technical and Standards Committee and the Advertising and Publicity Committee. The afternoon session was devoted mostly to war emergency regulations affecting the industry and was conducted under the supervision of Ellsworth L. Mills, vice president of The Bastian-Blessing Co., Chicago, and chairman of the Committee on Government Rules and Regulations. An interesting address was delivered by Major Harry P. Taylor on "Selective Service and its Application to the Liquefied Petroleum Gas Industry."

John Bick, priority analyst of the Chicago District WPB followed Major Taylor with an instructive talk on "C.M.P. Regulations" which clarified many of the governmental forms used by the industry. Paul K. Thompson,

Midwesters

ABOVE: Harry K. Strickler, Protane Corp., and vice president of national LPGA; Florence Jacob, acting secretary of LPGA; E. Carl Sorby, Geo. D. Roper Corp.

ABOVE: B. D. Geroy, Illinois Bottled Gas Co.; Chas. Russell, Thermogas Co.; L. R. Forsyth, Omaha Blaugas Co., and retiring chairman of Midwest Section; V. J. Mueller, Wisconsin Bottled Gas Co.

LEFT: G. L. Brennan, Warren Petroleum Corp.; John C. Pankow, Detroit-Michigan Stove Co.; Ellsworth L. Mills, The Bastian-Blessing Co.

RIGHT: H. R. Pierce, The Sprague Meter Co.; Walter H. Hoagland, Shell Oil Co., Inc.; Peter Fish, Peter Fish Industries; W. T. Joplin, Butane Corp., and chairman Pacific Coast Section.

At Chicago

ABOVE: Harris A. Goodwin, The Bastian - Blessing Co.; F. B. Boice, Shell Oil Co., Inc.; M. W. "Pete" Welty, Phillips Petroleum Co.

ABOVE: Kenneth R. D. Wolfe, Fisher Governor Co.; Norman A. Evans, Pressed Steel Tank Co.; Forrest Fram, Fram Heating Co.; C. C. Turner, Maine Gas and Appliance Corp.

RIGHT: I. L. Tucker, Rapid Gas Corp.; G. J. Asbee, Scaife Co.; Henry Nissley, Nissley Natural Gas Co.

LEFT: George G. Brumder, Pressed Steel Tank Co.; A. H. Menuet, Skelly Oil Co.; George H. McFadden, Ohio Foundry & Manufacturing Co.; R. C. Williams, Skelly Oil Co.

Chief of the LP-Gas Unit of the Petroleum Administration for War, presented "Order L-86" in a way which simplified an understanding of its functioning and purpose. He was followed by Robert C. Stockton of the Chicago Regional O.D.T. who spoke on "O.D.T. Regulation."

A. H. Rose, of the O.P.A. Stove Industry Advisory Council, explained the government's interest in LP-Gas merchandisers in an explanation of the "Proposed New Stove Rationing Order."

Let-down from the weighty problems considered in the afternoon session came in attendance of the Association as a group at the Chez Pareé where an excellent dinner and floor show was enjoyed.

The Association resumed its deliberations the following day at luncheon when Walter A. Naumer, of Carbide and Carbon Chemicals Corp., gave a concise report on the activities of the National Advisory Committee. E. Carl Sorby, of Geo. D. Roper Corp., addressed the gathering on the activities of the association's Publicity Committee and made suggestions for its policies under wartime conditions. A "Customer Service Symposium" was presided over by Mr. Sorby, assisted by C. C. Turner, D. M. Bennett, and Frank Boice.

A delegation from Colorado invited the Midwest Section to hold its next meeting in Denver.

The meeting closed with an instructive sound picture, "10,000 Feet Under," which was shown through the courtesy of the Shell Oil Co., Inc., and depicted the interesting process of locating and drilling an oil well.

The 1250-gal. transport, designed for propane and butane mixed services, of the Skelly Oil Co., operating in the Maywood, Ill., territory. The liquid is handled by means of a Viking propane, butane power take-off pump. The company has 11 other transports of this exact type.

Butane Banished Winter Chills

By O. D. HALL

BUTANE gas has carried the entire heating load for one of the newest and most modern automobile service stations in Oklahoma, that of the Parker Motor Co., in Tahlequah, Okla.

This one-stop service station, owned and operated by Mr. and Mrs. R. L. Parker, cost $37,000 and is located on the main street of historic Tahlequah, for many years the capital of the Cherokee Indian nation. The station is equipped with latest type computing gasoline pumps and is 80 ft. x 142 ft. in dimensions.

The service department covers an area of 8000 sq. ft. and is well equipped to serve all types of cars and trucks. This department, as well as the attractive show room, is entirely heated by 16 butane space heaters.

C. G. Berry and W. L. Elkin, formerly co-owners of Butane Consolidated, Oklahoma City, who installed the 590 gal. butane supply tank and piping system, said the installations would provide plenty of heat for the service station. Since then Mr. Berry has established his own company, Eastern Butane Consolidated, in Tahlequah, and he now services the account.

The Parkers were sold on the idea of installing butane in their place of business by their experience with this fuel in their home and in an apartment building they own in Tahlequah. They have 13 butane stoves in these buildings.

"We were so well pleased with their performance, and with the economy and convenience of this fuel, that we did not have to be convinced by sales talks that butane was the thing to install in our new service station," said Mr. Parker.

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A. H. Rose Appointed to OPA Stove Rationing Section

Alfred H. Rose, formerly sales manager of the Moore Corp., Joliet, Ill., has been appointed head of the Industry Relations Section of the Heating and Cooking Equipment Rationing Branch of the Office of Price Administration.

Mr. Rose's section will establish and maintain close contact with the stove industry, which includes manufacturers, distributors, jobbers, trade associations, mail order houses, dealers and other groups who are interested in or affected by the Heating and Cooking Stove Rationing Program.

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Butadiene for New Plant Will Come from Texas

The General Tire & Rubber Co. has entered into a contract with the Government to operate a synthetic-rubber plant in Texas, it has been announced.

The new plant is already under construction.

Butadiene for the synthetic plant will be provided by the Humble Oil & Refining Co., which also has under way the necessary facilities.

Both the synthetic plant and butadiene plant are scheduled for completion in June of this year.

Carrots are Weapons, too

ONIONS may not be as dramatic as hand grenades . . . but vitamins are weapons of victory, too. It's no easy job these days keeping the folks well-fed and fit. But thanks to our Grand Range, my family is getting its quota of good nutrition.

The Simmer Burners, for instance, help me cook vegetables to salvage all the vitamins and flavor. I transform low-cost meat cuts into miraculous soups and stews. At the same time, we're saving precious fuel.

Yes, my Grand is on duty for the duration. It's not new, but you'd never guess it to look at it. It'll outlast Schicklgruber, I'm sure! And when our War Bonds come due, and we can buy a new range, you can be sure I'll look for another Grand.

WHEN PEACE COMES...IT WILL BE GRAND

Grand

Grand GAS AND ELECTRIC *Ranges*

DIVISION OF THE CLEVELAND COOPERATIVE STOVE COMPANY
CLEVELAND, OHIO

Pacific Coast Meeting May 28

AN important meeting of the Pacific Coast Section will be held at the St. Francis Hotel, San Francisco, Calif., May 28, 1943. The meeting will begin promptly at 9 a.m. D. D. Purrington, Standard Oil Co. of Calif., San Francisco, has charge of arrangements.

D. D. PURRINGTON

Since the meeting last November many changes have transpired. Just now an entirely new plan is being put into operation which involves transferring the regulatory authority from WPB to the Petroleum Administration for War and a representative of PAW will be present to explain these very vital changes.

Also appearing will be authorities on priorities, manpower, and price ceilings to discuss these matters and answer questions.

W. T. Joplin, chairman of the Pacific Coast Section, and but recently returned from Washington, D. C., has discussed the subject of price ceilings with industry men and members of the OPA and this subject will receive special attention at the meeting. These are some of the qustions to be discussed:

1. How does your present net margin per gallon compare with your net margin prior to Sept. 1, 1941?

2. What factors contributed to the change?

3. If you believe relief from your situation is necessary, what suggestions do you have for action to be taken?

4. If you believe action should be taken, what arguments can you advance in support of your suggestions, i.e., increased freight, transportation tax, increased wages, et cetera? (If possible, express this in cents per gallon or percentage.)

There will probably not be another meeting until late in the fall. Nonmembers of the association are welcome as guests sponsored by members.

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Texas Railroad Commission Amends LP-Gas Order

The Railroad Commission of Texas adopted several amendments to the order controlling the handling and odorization of liquefied petroleum gases on March 23.

These prohibit the filling of unapproved truck or trailer tanks; prohibit connecting an LP-Gas tank to any previously installed piping without first determining that such piping complies with the state laws and Commission rules; prohibit filling unapproved dispensing or storage tanks; specify what constitutes legal conversions of other gas appliances for use with LP-Gas, and orders the odorization of all LP-Gases (in gaseous or liquid state) sold for use in public buildings or for private consumption "so as to indicate by a distinctive odor the presence of gas when it is present in air in concentrations of as much as ½ of 1% by volume."

Odorization of such gases in refinery and similar use is not required.

The members of the Texas Railroad Commission are Beauford H. Jester, chairman; Olin Culberson, and Ernest O. Thompson. L. D. Ransom is secretary of the commission.

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Handbook

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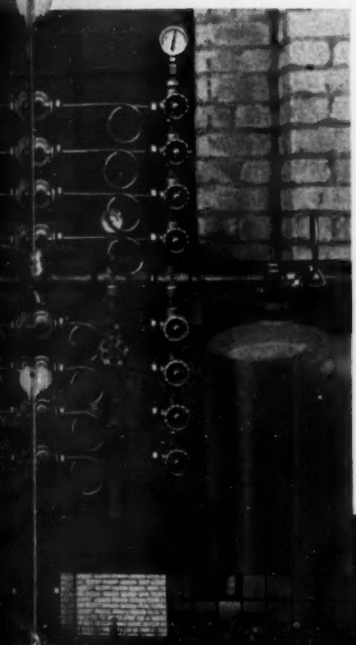

LP Gas and Rego Equipment are doing an outstanding job in the war effort. They serve dependably, safely and economically in installations for industrial and domestic heating, cooking and processing in war plants, training camps, shipyards, air-fields, houses for war workers, etc. Alert dealers can help this effort by showing where LP Gas can perform a better job to meet today's most urgent demands.

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A job you can do and do well is to promote the sale of U. S. War Bonds. Tell your customers and prospects to Buy Bonds—all they possibly can. When peace returns and our boys come marching home—then you can sell those sparkling new Roper C.P. Gas Ranges. In the meantime, housewives should be encouraged to take care of the gas ranges they have—to make them last for the duration.

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RESEARCH

• **EACH MONTH a competent staff reviews more than 70 publications serving the oil, gas and affiliated industries in a search for those published articles of value to technicians and executives in the liquefied petroleum gas industry. In this department of BUTANE-PROPANE *News*, brief abstracts of such articles are presented.—Editor.**

100-Octane Aviation Gasoline Processes Show Rapid Advance.—C. L. Pryor, *Petroleum Engineer*, April, 1943, Page 79. Detonation, the less familiar designation of the term commonly known as "knocking" in an internal combustion engine, has long been a problem both in designing of engines and in preparation of their fuels. Although no satisfactory explanation of detonation has been found by scientists, it is known that it increases in severity and extent; for example, by an increase of engine compression pressure, local hot spots, and other factors involved in design. The primary factor affecting detonation, however, is the chemical character of the fuel burned. It has been found that engine knocking is primarily a fuel rather than a mechanical problem and methods of overcoming it are discussed.

Isomerization—A Useful But as Yet Little Used Tool for the Refiner—Arch L. Foster, Prt 2. *Oil and Gas Journal*, March 4, 1943, Page 51. Isomerization has been used chiefly as a means of obtaining isoparaffins for use in other syntheses such as alkylation of aviation fuel components. It also may be and is being used as a reaction for production of finished products, such as neoparaffins and other iso compounds, for the improvement of motor fuels. Several complicated isoparaffins may be synthesized, theoretically and in many cases doubtless practicably, from normal paraffins, either by isomerization alone or by isomerization-alkylation—or other process combinations.

Plant Manufacture of HCl for Use in Isomerization—*Oil and Gas Journal.* Two units have just been constructed for the manufacture of anhydrous hydrogen chloride, which is used as a promoter in the isomerization of normal butane—an important operation in the preparation of raw materials for the manufacture of 100-octane aviation gasoline.

One of these units was designed to produce 1267 lb. per day, and the other 4000 lb. per day of anhydrous chloride. These quantities were set such that the isomerization unit could be filled in approximately 48 hours, and the hydrogen chloride generation unit under normal conditions would have to operate approximately one day a week to make up for losses.

The Refrigerating Data Book and Catalog.—Published by The American Society of Refrigerating Engineers, 50 W. 40th St., New York City. Prepared for those who manufacture, distribute, use, design, apply, install, operate, and service refrigeration equipment. The contents include refrigeration cycles, fundamental data, and industrial, domestic, commercial and air conditioning systems. This is

a standard reference work of the refrigeration and air conditioning industry. It is the fifth edition and has been entirely rewritten and revised for 1943-44. Price, $4.

More Efficient Burning of Refinery Fuels—Robert Reed, *Oil and Gas Journal*, March 11, 1943. Page 99. Admitting that combustion is an art and not a science in the light of our present knowledge of the subject, the author of this article shows the way in which it may become a science by outlining the basis of measuring the efficiency of refinery furnaces. The second part of the paper discusses the handling of burners of different types using different grades and classes of fuels.

Post-War Pricing.—By George V. Trundle, Jr., *The Stove Builder*, May, 1943. The post-war problems will require a major shift in viewpoint from the present day. Now, there is no selling to do. The government buys most of what is produced and the public clamors for the rest. But what will the post-war buyers be like? What will they want? How much money will they have to spend? What values will they ask for their money? What they will demand and how they will spend is discussed at length.

Clycloversion Process Produces Ingredients for Aviation Gasoline.—*Petroleum Engineer*, April, 1943, Page 98. Clycloversion is a process developed and recently announced by Phillips Petroleum Co. for the manufacture of high quality aviation fuel ingredients. Naphthas produced in thermal operations are converted catalytically to aromatic rich stocks for use in aviation gasoline. The necessity for maximum development of catalytic conversion processes at this time is obvious. Better fuels make possible the development of better engines. The extension of fighting fronts to all parts of the globe is demanding from the industry enormously increased quantities of aviation fuel. The cycloversion process helps on both counts, for it not only aids in meeting the increased quantity demand but also can provide aviation fuel much superior to present-day 100-octane. Features and description of the process are given in detail.

Expansion of Catalytic Processing Year's Feature in Refining—J. P. O'Donnell, *Oil and Gas Journal*, March 25, 1943, Page 66. Approximately 80 catalytic cracking units at refineries of 34 companies have already been installed or approved, a growth of 76 since the start of 1941. While these have been built primarily to satisfy war demands, they are destined to play an important psstwar role.

Combustion of Excess Gas—R. A. Fox, *Oil and Gas Journal*, March 26, 1043, Page 209. Automatic control of boiler firing becomes more imperative under the excessively varying loads applied by modern refining operations. Disposal of excess refinery gases without waste also is often a serious problem. This article shows how new methods may be applied.

Prediction of Suction Limitation When Pumping Volatile Liquids.—By Clark D. Bower and Perry H. Brown, *California Oil World*, April (second issue), 1943. A paper delivered before the April meeting of the California Natural Gasoline Association.

"THE fact that manufacturers have stopped making appliances shouldn't stop us L-P Gas Dealers from selling. Right now I'm selling future business with goodwill.

"After the war, enthusiastic users of L-P gas stoves are going to be my best prospects for gas refrigerators.

"And in most cases, it doesn't take much effort to keep these customers happy. My men inquire how their appliances are working when they make deliveries. Usually their equipment doesn't need attention, but because I keep in touch with them, they know I'm ready to serve them.

• • •

"SATISFIED CUSTOMERS TODAY . . . MEAN MORE PROSPECTS TOMORROW"

FREE L-P REFRIGERATOR SERVICE MANUAL—Write today for your free copy to Servel, Inc., Evansville, Ind.

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PEACETIME MAKER OF THE SERVEL GAS REFRIGERATOR

THE BOTTLED GAS MANUAL

Chapter 19 — Competitive Fuels —Oil—

Part 2.

● **Part 1 of Chapter 19 of the Bottled Gas Manual appeared in the May issue of Butane-Propane News, Page 18. Questions and answers for both parts are given this month.—Editor.**

●

Oil for Domestic Cooking, Water Heating and Space Heating. Where the winters are long and cold,the demand for heat (one that exists 24 hours in the day), and the heat requirements well within the limitations of the range burner's ability to supply, we must admit that we have a difficult competitive condition from the dollars-and-cents angle. Because each application of oil to heating problems differs widely in conditions, it is impossible for us to place our finger on its adaption to space heatnig and say that it is a certain percent efficient and a certain number of pounds of propane may be counted upon to do the work of a gallon of oil. Successful competition in such instances depends on how we are able to answer the following questions:

1. What per cent of the heat delivered by oil is actually desirable?

2. Can the heating problem be more economically handled by some other means?

3. Can thermostatic control of heating by propane place it in a competitive position?

4. Can expenses incidental to oil use be eliminated by the use of propane?

There are many instances where the heating of the kitchen might be more economically handled by the central heating plant. We had such an example right here at "Gracourt," in the State of Maine. The kitchen called for 31.95 sq. ft. of steam radiation, which at maximum demand would have called for 7568 B.t.u. input per hour. We kept the range oil burner operating 24 hours and consumed 3 gals. of oil per day, or 91.23 gals. per month. In other words, cold and warm days alike we were cramming 408,000 B.t.u. into that room for a job that at maximum demand could not have called for over 181,632 B.t.u. Grant that we may have used an excessively large amount of hot water, let us say 60 gals. per day of 100°rise, this only could have called for 50,000 B.t.u., so that on the very coldest days we could have only needed

$181{,}632 + 50{,}000 = 231{,}632$ B.t.u.

in that room. We installed a radi-

●

● **The Bottled Gas Manual series by C. C. Turner, started in the July, 1941, issue of BUTANE-PROPANE *News* and will continue to be published monthly in chapter form until completed. This series constitutes a valuable text book and field manual that should be invaluable to everyone in the liquefied petroleum gas industry.—*Editor.***

DALLAS TANK & WELDING COMPANY, INC.

BUTANE DIGEST

By W. W. BANKS

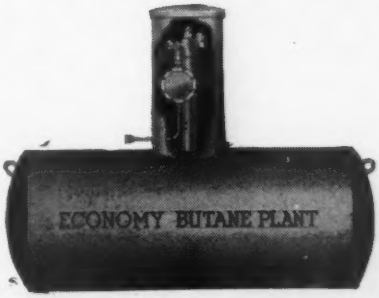
Acknowledgement is here made of the many kind letters received commenting on my editorial as Guest Editor in the May issue of this publication. It is heartening to know that our industry is alert and grappling with the problems that confront us now and to come later. It's a healthy sign!

•

As we have remarked so many times before in this column, let's not lose contact with the ultimate consumer. He is the man who uses the appliances, the fuel, the service—he is our boss in the final analysis. While perhaps he cannot buy much, of anything now, he CAN and WILL buy later if contact and proper service relations are maintained. Courtesy and friendly interest costs little or nothing. A helpful suggestion from time to time on how to get more service out of the present equipment and make it last longer is a patriotic deed that will pay good dividends later.

•

Buy Bonds
To Build Bombers!



DALLAS TANK
AND
WELDING COMPANY, INC.
201-5 W. COMMERCE ST. DALLAS, TEXAS

ator, removed the range with its oil burner, and put an automatic gas-fired water heater, in the basement. Here is the picture "before" and "after":

Before the Change Was Made

25 lbs. of propane per month for cooking @ 12c lb.	$ 3.00
91.23 gals. range oil @ 8.4c per gal.	7.66
212.87 gals. fuel oil @ 7.4c per gal.	15.75
Total monthly fuel bill	$26.41

After the Change Was Made

70 lbs. of propane per month for cooking and water heating @ 7.5c per lb.	$ 5.25
258.48 gals. fuel oil @ 7.4c per gal.	19.12
Total monthly fuel bill	$24.37

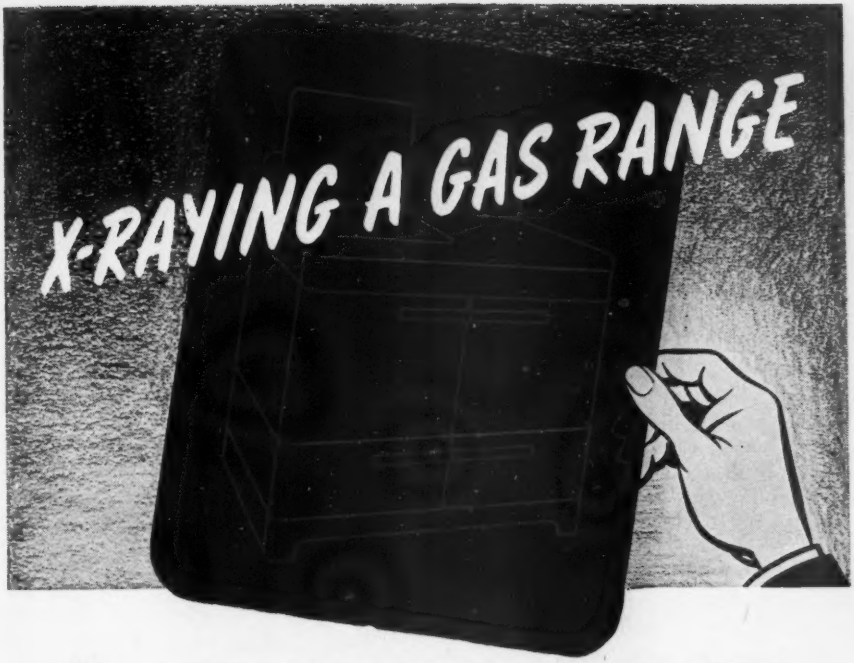
Saving affected per month by the change was $2.04. This amounts to a mere $24.48 per year, to say nothing of the bother, smell and mess that was eliminated!

You will very definitely run into many cases where you cannot save the customer any money during the winter months by substituting 100% propane operation for the kitchen oil burner, but you can offer very definite savings during the summer months to say nothing of other advantages. We'll have a whole lot more to say on this when we come to our session on space heating.

Oil for Water Heating. During the past few years several oil automatic water heaters of the so-called "pot" burner type have come onto the market, and many extravagant claims have been made for their economy. I have the catalog page of one of these manufacturers in which an efficiency of 60% is claimed. This is quite possibly true when the heater is new, but it is a known fact that the efficiency of this type of heater decreases rapidly to 40% or less. * This is caused by two unavoidable happenings. The excessively high temperatures encountered in heaters of this type soon causes a deposit of hard scale on the inside of the water heater. A very thin coating of carbon in the combustion chamber and flues aids in the absorption of heat, but as this coating thickens it becomes an excellent insulation. These two insulating layers prevent heat from going where it is supposed to—into the tank and thence to the water.

This same water heater burns one-eighth of a pound of 133,000 B.t.u. per gal. of oil per hour when the pilot flame is in operation. As this oil weighs approximately 6.722 lbs. per gal., this calls for an input of 2394 B.t.u. per hour which might be called wasted energy. Here at "Gracourt" we have a gas-fired automatic storage water heater which on high flame only has an input of 2500 B.t.u. per hour. At 70% efficiency this provides us with 50.4 gals. of 100° rise water in 24 hours. Please note that the energy wasted by that particular pot type oil water heater for the purpose of provid-

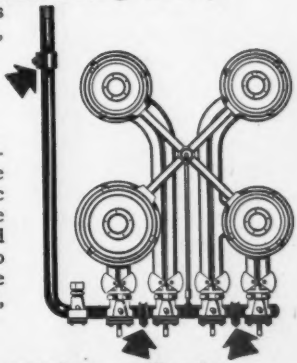
* I have this fact in writing on the authority of one of the officials of this company that manufactures the water heater mentioned.



While war materiel rolls off the Caloric lines, our engineers and designers study, with X-ray eyes, the ideas, materials and designs for the "Caloric Range of the Future." For instance, the feature below is being "held up to the light"—subjected to analytical examinations to improve or replace it with something even better, if possible.

This was an outstanding feature of the last Caloric off the lines before war production.

This is the Caloric 3-point suspension for the manifold pipe, the "main artery" that delivers gas to the burners. *Three* sturdy saddle-clamps at strategic spots eliminate a common defect in ordinary range construction. So rigidly is the manifold supported that no amount of lifting, pushing or other abuse to which the average range is subjected, can cause leaks.



CALORIC
GAS RANGES

"We made the finest before...we'll make it even finer tomorrow"

CALORIC GAS STOVE WORKS
PHILADELPHIA, PA.

ing a lighting medium when the full input of the burner is demanded is approximately the same as the entire demand upon the water heater at "Gracourt."

On the surface it might appear that if the gas water heater can in some instances operate upon the amount of heat wasted by the oil water heater it should be able to surpass its competitor in economy of operation, but don't go on this assumption, for, if you do, your competitor will soon tie you up in knots. To furnish 50.4 gals. of 100° rise water per day the gas water heater in this instance must run at full capacity all of the time. Its input would be 24×2500, or 60,000 B.t.u. in 24 hours, or 2.77 lbs. of propane. If we count the entire pilot input of the oil water heater as being wasted there are 24×2394, or 57,456 B.t.u. thrown away, and to heat 50.4 gals. of 100° rise water 42,000 B.t.u. would be required, which when adjusted to 40% efficiency of the oil water heater becomes 105,000 B.t.u. This 105,000 B.t.u., plus the 57,456 B.t.u. thrown away totals 162,456 B.t.u., or 1.22 gals. of 133,000 B.t.u. oil. We now have the disconcerting picture of it requiring 2.77 lbs. of propane to do the work of 1.22 gals. of oil, or 1 lb. of propane being equivalent to 0.44 gals. of oil. This means that if oil sold for 8 cents per gal., propane would have to sell at 3.72 cents per lb., and correspondingly less when the price of oil dipped to lower levels, in order to be on a break-even basis.

Too many propane salesmen give up the battle as lost right at this point because they lose sight of these two facts:

1. Whereas the oil water heater cannot operate on pilot flame at any less than 2394 B.t.u. input per hour, the gas water heater will operate a considerable portion of the time on a pilot input of approximately 794 B.t.u. per hour.

2. The rate schedule of practically every distributor of propane is so devised that on *domestic* water heating the price of propane is less than 3c per lb.!

Immediately there will be many who will say, "My company has no such ridiculously low rate." I am sorry to contradict you, but in all probability it does have such a rate, the reason that you deny its existence is that *you do not understand your own rates.*

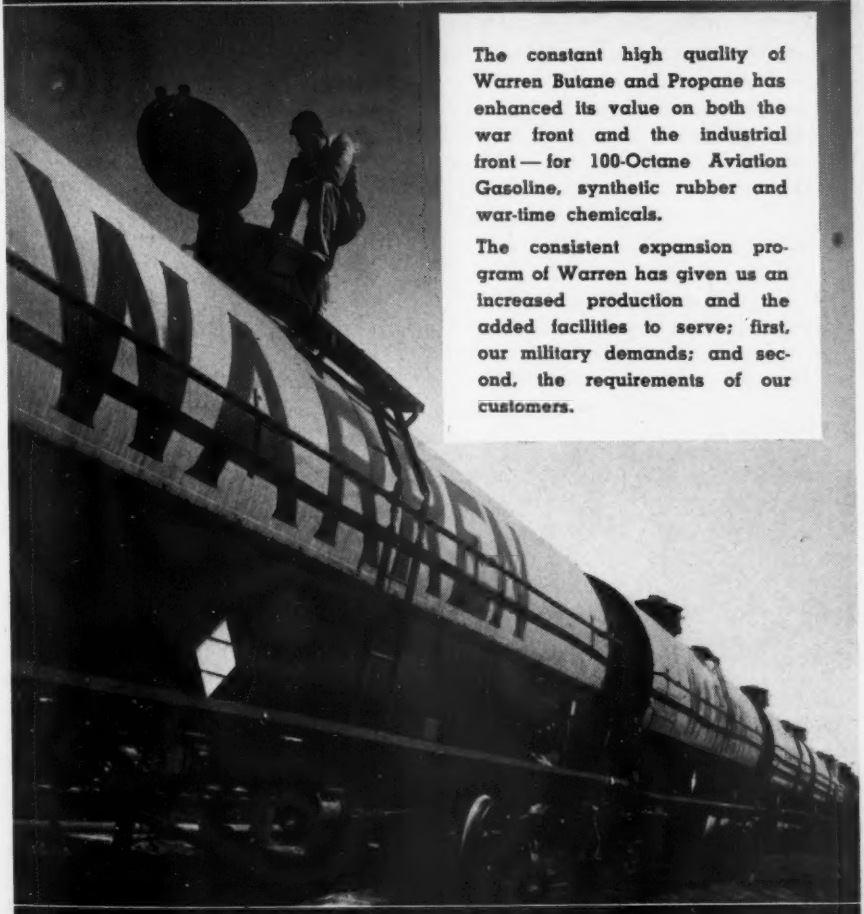
Let's start with a statement of facts:

1. The cooking load is the *basic* domestic load of the propane industry.

2. The more gas that is used, the lower the price of propane.

Let's take an actual case example. Back in Chapter 17 we mentioned one in which the consumption was 40 lbs. monthly for cooking and 40 lbs. for water heating. Let's start with this customer before the water heater was installed, and we will use the actual rates of one company which gets 12 cents per lb. for the cooking load and offers a so-called "dual usage" rate of 7 cents per lb. when gas is used for cooking and water heating. Before the water heater was installed the customer paid 40×12 cents, or $4.80 per month for cooking fuel. When the water heater was installed he paid 80×7,

WARREN
LIQUEFIED PETROLEUM GAS



The constant high quality of Warren Butane and Propane has enhanced its value on both the war front and the industrial front — for 100-Octane Aviation Gasoline, synthetic rubber and war-time chemicals.

The consistent expansion program of Warren has given us an increased production and the added facilities to serve; first, our military demands; and second, the requirements of our customers.

WARREN PETROLEUM CORPORATION

Tulsa, Oklahoma

or $5.60 for fuel. The increase in the fuel bill is only 80 cents per month. Why does he get this lower rate? *It is because he has installed a water heater;* therefore, any savings effected in the price per pound should be credited to the gas used through the water heater and not to the gas used through the range. The cooking bill, therefore still remains at $4.80 and the 40 lbs. additional gas used for the water heater is costing the customer only 80 divided by 40, or 2 cents per lb. To be competitive, oil would have to sell at 2.27×2 cents=4.54 cents per gal.

You can readily see that because of varying demands and rates it is impossible to set up any definite basis of competition between the gas-fired and the oil-fired water heater, but we can emphatically state that if your gas price schedule is right, and the demand upon the water heater is that which is ordinarily encountered in the average home, the oil-fired water heater is not even in running competition with the propane water heater. *Know your rates, carefully analyze the job at hand,* and you will have no trouble in meeting this type of competition.

Oil in Space Heating. Let a gas-fired space heater run wild, as the majority of oil space heaters do, without the benefit of thermostatic control, and you cannot hope to compete with oil as a space heating fuel. If, however, you watch the matter of insulation, controlled temperatures, and eliminate the waste of unneeded heat you can in many instances back oil out of the picture.

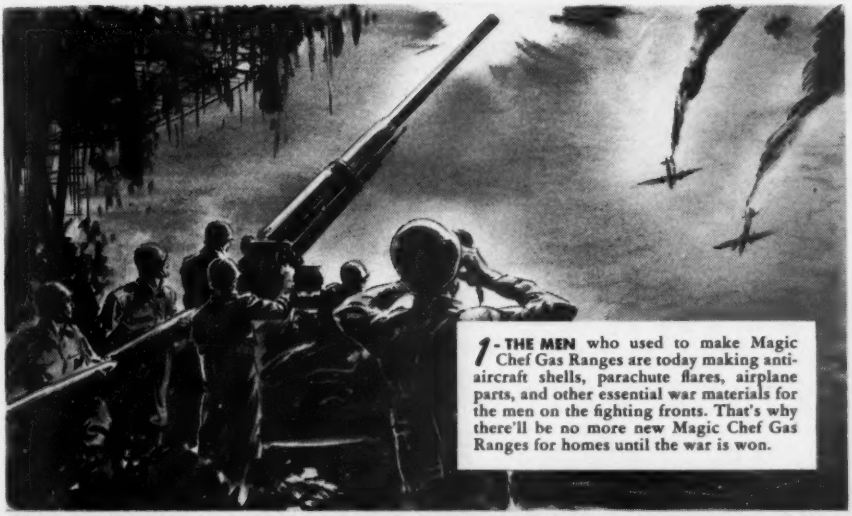
Let us analyze the average oil space heating installation. A large circulating heater is installed at some central point if possible, but its location is pretty much governed by the location of the chimney, and it may not be the most advantageous point. Where more than one room is to be heated the condition usually found is an excessively high temperature in the room where the heater is located, drafts due to the circulation of air, and certain amount of odor. All of the doors must be kept open within the house if heat is to be circulated and privacy becomes something only read about in story books.

Compare such a picture with that of the home heated with gas-fired steam radiators. Each room has its own radiator balanced to its particular needs. Each radiator is individually controlled by a thermostat. The living room can be a comfortable 72° while the bedrooms are held at a healthy 50. Privacy is not sacrificed, and the disadvantages of oil, which we shall mention later, are eliminated.

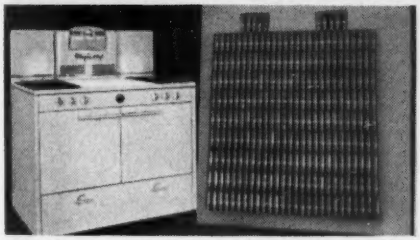
Gas-fired circulating heaters of the vented type have an efficiency of approximately 75%, according to the specifications of one of the largest manufacturers of this type of appliances. A slightly higher efficiency is claimed for gas-fired steam radiators, and one manufacturer of gas-fired radiant circulators claims an efficiency of 82%. We can, therefore, safely count upon 75% efficiency for the gas-fired heater.

The average oil heater is nothing more than a sheet metal box

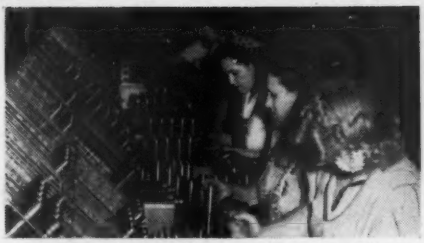
How many Magic Chef Gas Ranges to knock down a dive bomber?



1 - THE MEN who used to make Magic Chef Gas Ranges are today making anti-aircraft shells, parachute flares, airplane parts, and other essential war materials for the men on the fighting fronts. That's why there'll be no more new Magic Chef Gas Ranges for homes until the war is won.



2 - THE MATERIAL once used to make one All-American Magic Chef Gas Range now produces over 250 40mm. anti-aircraft shells . . . about enough for 2 minutes' fire from a modern anti-aircraft gun that could knock down an enemy dive bomber.



3 - TODAY American Stove workers are working to close tolerances demanded for military equipment. Using new materials, new techniques. This knowledge, plus years of range making experience, will produce better Magic Chef Gas Ranges when victory comes.

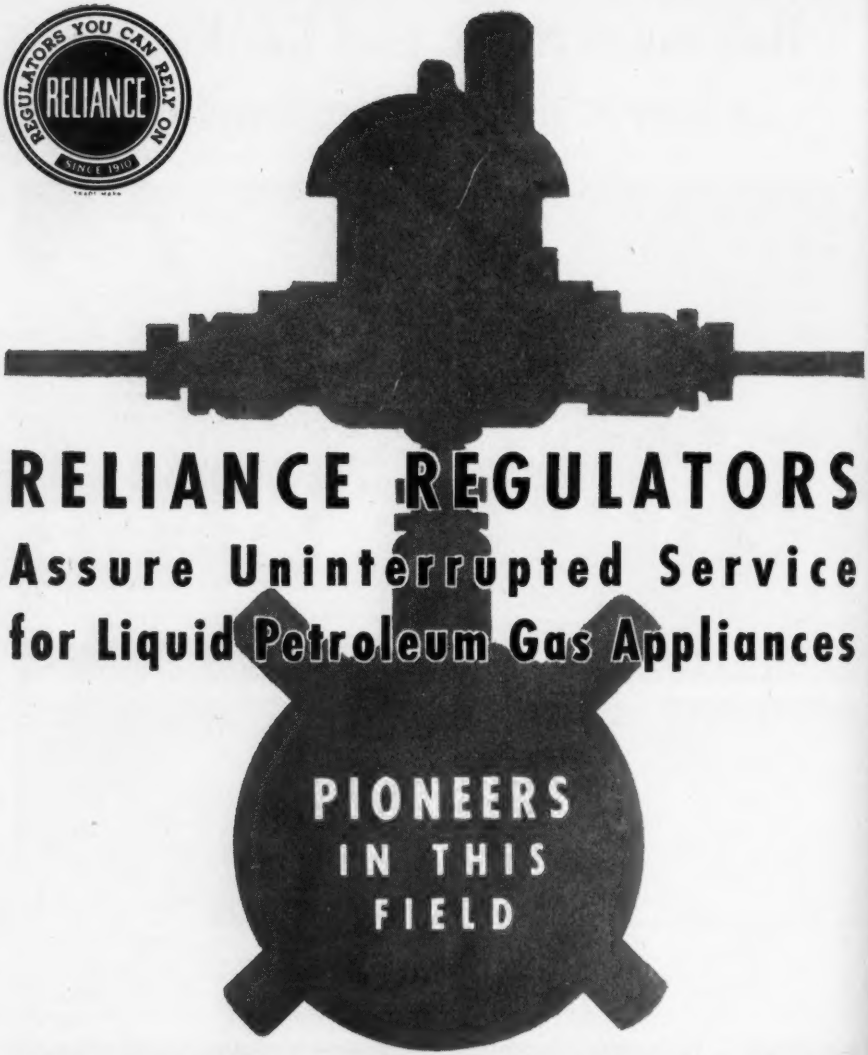
Magic Chef

HEAVY DUTY GAS COOKING EQUIPMENT

COPR. 1943 AMERICAN STOVE COMPANY

AMERICAN STOVE COMPANY, 4301 PERKINS AVENUE, CLEVELAND, OHIO

NEW YORK . . . CLEVELAND . . . ATLANTA . . LOS ANGELES . . . CHICAGO . . . SAN FRANCISCO . . . SEATTLE . . . PHILADELPHIA . . . ST. LOUIS



RELIANCE REGULATORS

Assure Uninterrupted Service for Liquid Petroleum Gas Appliances

Reliance Regulators are available for large and small installations with automatic control of multiple cylinder assemblies. They are safeguarded by a safety seal. Two-step reduction eliminates the possibility of high pressures getting into the appliances.

Reliance Regulator Corporation, 1000 Meridian Ave., Alhambra, Cal.

with an oil burner installed inside of it, and a sheet steel shell on the outside which gives it the dignified name of "circulating heater." Instead of making the hot gases travel a devious path and give up much of their heat, as in the kitchen range, the flue is directly connected near the top of the sheet metal box, and it is not an uncommon sight for the burner flames to be entering the flue. This is particularly true of the "pot" type of burner. This, of course, results in high flue temperatures and low efficiencies. When new and not forced, oil heaters of this type may, *under ideal conditions*, have an efficiency of 70%, * but as the interior of the sheet steel box becomes coated with soft carbon this rapidly drops to about 60%. Efficiencies as high as this naturally depend upon proper adjustment of the automatic draft control, and *this is something that is rarely found.*

On the basis of such comparative efficiencies it would require 5.02 lbs. of propane to do the same heating job that can be done by 1 gal. of 136,000 B.t.u. oil, and it is obvious that where large amounts of heat are required for 24 hours, day after day, propane is not in a competitive position. Our position in this field is that of supplying intermittent or auxiliary heat in such places as the offiice, store, lodge or social room, guest room, bathroom, or as a "booster" to instantaneously pick up the heating load in the morning while more cumbersome, if cheaper, methods are swinging into action. In such instances the gas-fired heater not only serves a useful purpose because of its instantaneous and flexible response, but may make possible economies in operation of other units or replace them entirely for occasional use at a substantial saving. Also, don't forget this important factor: You may be able to do the same job with far less inputs by using thermostatic controls, properly locating the heaters which you install and balancing them to the particular heat needs of each room.

Advantages of Oil As a Fuel. Oil has its advantages which recommend it for domestic usage under certain conditions. They are as follows:

1. More convenient to handle than either coal or wood.
2. Even heat content if a particular brand and grade is used at all times.
3. Continuous operation possible with very little attention required.
4. Can be used in connection with chimneys that are unsafe for either coal or wood fires.

Disadvantages of Oil As a Fuel. There are many disadvantages to oil as a fuel which are as follows:

A. Disadvantages Applying to all Types of Usage—

1. Slow starting and getting up to temperature.
2. Waste of fuel when burner is shut off.
3. Discernible odor at all times; objectionable odor occasionally.
4. Danger of flue fires. This is particularly so when used in connection with a flue that has

* These figures are based on the claims of Sears, Roebuck & Co. for their pot type circulating heaters.

previously been used for coal or wood fires and has not been cleaned prior to the use of oil.

5. Danger of fires from spillage or leakage. In case of fire the fuel must either be entirely burned up or the flame smothered. In the latter case the danger of unburned fuel still remains unless it is carefully cleaned up. If the surface is wood this is practically impossible.
6. Danger of explosion when lighting a warm burner.
7. Danger of flooding burner, with resulting fires. This may be caused by a pin hole in a thermo-syphon tank, dirt in a constant level valve, or change of supply level due to slippage of set screws or heaving of foundations.
8. Danger of gasoline being delivered instead of oil. This has happened with disastrous results.
9. Combustion troubles. May be caused by atmospheric conditions, dirt in the fuel, or a dirty burner.
10. Difficult to control thermostatically. Unless the thermostat is of the snap action type a thermostat setting for one brand or grade of fuel is no good for another.
11. Requires a good draft.
12. Requires an expensive chimney.
13. Requires frequent burner cleaning. (Pot type manufacturers say "no" to this, but their burner operates more efficiently when it is reasonably clean.)
14. If burner is of the sleeve type it requires frequent replacement of wicks.
15. Sleeve type burners quite frequently require replacement of parts due to warpage from excessive heat.
16. Messy, in spite of the utmost care.
17. Price of oil is not constant. In fact, the trend of the oil market is to rise.
18. Inconvenience of filling or gaging supply tank frequently.
19. Requires a carefully adjusted automatic draft regulator for efficient operation.
20. Dangerous because it can be a source of carbon monoxide gas.

B. Disadvantages Particularly Applicable to Cooking—

1. Slow.
2. Excessive room temperatures.
3. Cannot broil with it.
4. Danger of fire in deep fat frying due to unnecessarily high top-of-the-stove temperatures.
5. Excessive shrinkage of foodstuffs, particularly meats, due to improper temperatures.
6. Quality of cooked food is generally inferior.
7. Uniform results not possible.
8. Cost of operation increased by keeping in operation when it is not wanted.
9. Frequent cleaning of the burner is necessary.

C. Disadvantages Applicable to Water Heating—

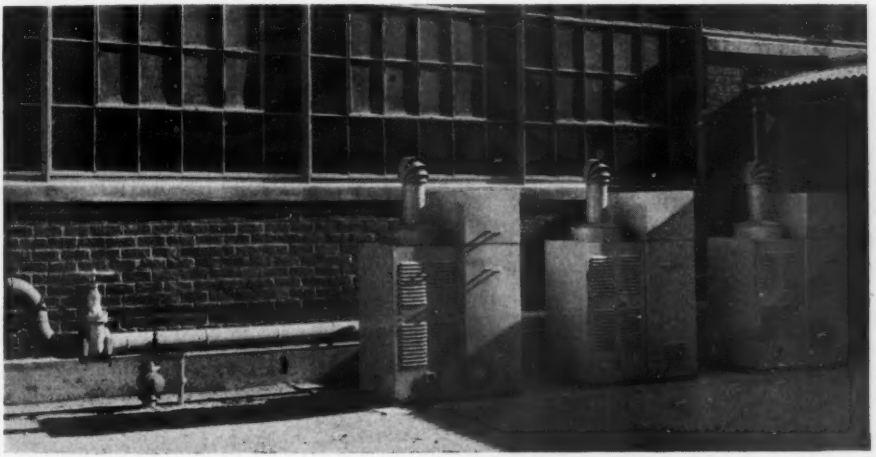
1. Life of heater and hot water system materially decreased by the excessively high temperatures.
2. Automatic units available are, as a rule, too large for the average domestic installation.

D. Disadvantages Applicable to Space Heating—

Domestic Business Curtailed?

THEN SWITCH TO COMMERCIAL!

★ To build a bigger fuel load in the face of restrictions, call on war plants and essential industries in your territory and suggest that they investigate Algas Plants—a reliable gas supply right ★ on the premises for either stand-by or permanent operation.



★ Algas Plants solve the gas shortage problem, often reduce utility company gas rates, and supply fuel where piped gas is ★ not available.

★ ★ ★ ★

Get prospects in your territory to write for our brochure. Other dealers are doing it and are building big fuel profits!

AMERICAN LIQUID GAS CORPORATION

1109 SO. SANTA FE AVENUE. LOS ANGELES, CALIFORNIA

TABLE 10. POUNDS OF PROPANE EQUIVALENT TO 1 GAL. OF 136,000 B.T.U. OIL AT VARIOUS EFFICIENCIES

136,000 B.t.u. Per Gallon of Oil
Per Cent Efficiency

		20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
		Effective B.t.u. Per Gallon																	
Per Cent Efficiency	*Effective B.t.u. Per Lb. of Propane*	27200	54000	40800	47600	54400	61200	68000	74800	81600	88400	95200	102000	108800	115600	122400	129200	136000	
		Pounds of Propane Per Gallon of Oil																	
20	4326.6	6.28	7.85	9.43	11.0	12.5	14.1	15.7	17.2	18.8	20.4	22.0	23.5	25.1	26.7	28.2	29.9	31.4	
25	5408.25	5.02	6.28	7.54	8.80	10.0	11.3	12.5	13.8	15.0	16.5	17.6	18.8	20.1	21.3	22.6	23.8	25.1	
30	6489.9	4.19	5.23	6.28	7.33	8.38	9.43	10.4	11.5	12.5	13.5	14.6	15.7	16.6	17.8	18.8	19.9	20.9	
35	7571.55	3.59	4.40	5.38	6.28	7.18	8.08	8.98	9.87	10.7	11.6	12.5	13.4	14.3	15.2	16.1	17.0	17.9	
40	8653.2	3.14	3.92	4.71	5.50	6.28	7.05	7.85	8.60	9.90	10.2	11.0	11.7	12.5	13.3	14.1	14.9	15.7	*
45	9734.85	2.79	3.49	4.19	4.88	5.58	6.28	6.98	7.68	8.27	9.08	9.77	10.4	11.1	11.8	12.5	13.2	13.9	
50	10816.5	2.51	3.14	3.77	4.40	5.00	5.65	6.28	6.90	7.50	8.25	8.80	9.40	10.0	10.6	11.3	11.9	12.5	*
55	11898.15	2.28	2.85	3.42	4.00	4.57	5.14	5.71	6.28	6.85	7.42	8.00	8.57	9.14	9.73	10.2	10.8	11.4	
60	12979.8	2.09	2.61	3.14	3.66	4.19	4.72	5.20	5.75	6.28	6.75	7.30	7.85	8.30	8.90	9.40	9.95	10.4	*
65	14061.45	1.93	2.41	2.90	3.38	3.86	4.35	4.83	5.31	5.80	6.28	6.77	7.25	7.73	8.22	8.70	9.18	9.67	
70	15143.1	1.79	2.20	2.69	3.14	3.59	4.04	4.49	4.93	5.30	5.80	6.28	6.70	7.15	7.60	8.05	8.50	8.95	*
75	16224.75	1.67	2.09	2.51	2.93	3.35	3.77	4.19	4.61	5.02	5.44	5.86	6.28	6.70	7.12	7.54	7.96	8.38	
80	17306.4	1.57	1.96	2.35	2.75	3.14	3.52	3.92	4.30	4.95	5.10	5.50	5.80	6.28	6.65	7.05	7.45	7.85	*
85	18388.05	1.47	1.84	2.21	2.58	2.95	3.32	3.69	4.06	4.43	4.80	5.17	5.54	5.91	6.28	6.65	7.02	7.39	
90	19469.7	1.39	1.74	2.09	2.44	2.79	3.14	3.49	3.84	4.13	4.54	4.88	5.20	5.55	5.90	6.28	6.60	6.95	*
95	20551.35	1.32	1.65	1.99	2.31	2.64	2.97	3.30	3.63	3.97	4.30	4.63	4.96	5.29	5.62	5.46	6.28	6.61	
100	21633.	1.25	1.57	1.88	2.20	2.50	2.82	3.14	3.45	3.75	4.12	4.40	4.70	5.00	5.30	5.65	5.95	6.28	*

* VALUES GIVEN ON LINES MARKED BY ASTERISK (*) ARE BY INTERPOLATION.

Need ENGINEERING assistance?

When time is of the essence, why struggle with problems involving heat applications, when there is a trained and fully staffed engineering force who are specialists in this field. ☆ These men are thoroughly conversant with all commercial and industrial applications of heat . . . whether it be space heating, drying, cooking, burning, baking, material heating. It makes little difference whether you need a small hand torch or the complete design and erection of a Butane power or standby plant—our engineers are ready to serve you with production equipment when possible, and with special designs when necessary. ☆ Your inquiries are invited.

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Designing and Constructing Engineers

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Ransome

1. Location of heater is governed by the location of the chimney.
2. Excessively high temperatures due to inflexibility of control, or lack of thermostatic control, or location of heater.

Relative Efficiencies of Gas and Oil Burning Appliances. The efficiency of the appliance itself is one thing; the over-all efficiency of the appliance and its application is an entirely different matter, and its relation to the relative cost of the two fuels is what really interests us. There are those who make a fetish of this matter of efficiencies and for their benefit Table 10 on relative efficiencies has been compiled. It has its use in determining relative costs if you know what the efficiency of one fuel is and can determine with reasonable accuracy what the efficiency of the other fuel will be. From it you can determine how may pounds of propane will be required to do the work of one gallon of oil, and by using this information in connection with your schedule of propane prices you can quickly determine whether or not it will be possible for you to tackle the job competitively from the cost angle.

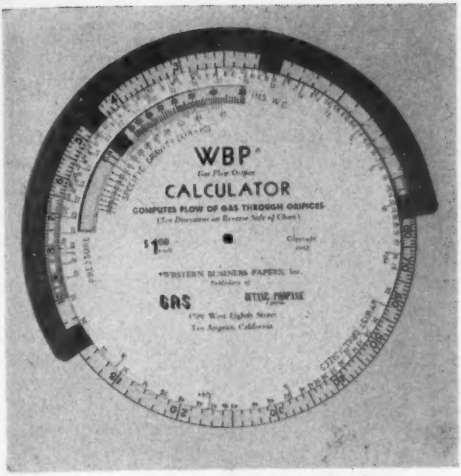
We have covered much ground this evening, and we have learned that this blood cousin of ours is not the formidable competitor that we had thought it to be. Let's remember all of this when we get to considering this matter of space heating in Chapter 21, and better yet, let's apply it to what we have already learned about cooking and water heating!

Now, for the questions on Chapter 19. Then check with the correct answers on Page 64.

Questions on Chapter 19

1. A. What are the three grades of oil in which we are interested competitively?

   B. What are their B.t.u. ratings?
2. What are the average requirements in gallons of oil per day for cooking and water heating by the range oil burner?
3. A cooking job has required 40 gals. of range oil per month. It is replaced by a propane appliance using 30 lbs. of propane per month. What was the over-all efficiency of the oil burning appliance?
4. If oil in the preceding case cost 8 cents per gal., at what price per pound must propane sell to be competitive?
5. The price of propane for cooking only is 8 cents per lb., and 5 cents per lb. for cooking and water heating. A customer uses 30 lbs. of propane per month and decides to install a water heater. He uses 90 lbs. per month for both services. How much is he paying per pound for the propane used in water heating?
6. A customer is using 3½ gals. of oil per day at 8.8 cents per gal. If you can do the same job on 110 lbs. of propane per month at what price would it



NEW GAS FLOW ORIFICE CALCULATOR

Invaluable to LP-Gas Engineers, Shop Men, Domestic Appliance Service Departments, LP-Gas Appliance Manufacturers, and All Others Who Need to Check or Determine LP-Gas Orifice Sizes.

- **Easy to Use and Carry**
- **No Need for Calculations**
- **No Reference to Tables**
- **Just Set Scales and Read**

Ever had to convert an appliance from manufactured or natural gas to LP-Gas and needed to know what orifice size to install? Ever had to estimate how much gas a burner could handle? Ever had to convert B.t.u. per hr. to cu. ft. per hr., or vice-versa? Ever had to know the B.t.u. input load of an appliance or industrial burner? With the Gas Flow Orifice Calculator you can quickly and accurately work out all these and many other problems.

Checks all factors relative to orifice sizing for gases from 300 B.t.u. to 3300 B.t.u. at pressures from .5-ins. to 15-ins. water pressure. Determines the flow of orifices from sizes 1 to 75 number drills, from sizes A to Z in letter drills, and from sizes 2/64 to 32/64 in fraction drills.

Priced for quantity purchase to enable you to obtain a sufficient number for everyone in your organization concerned with orifice sizing. Privilege to return within 10 days, for any reason, further assures your satisfaction. We pay postage on orders accompanied by remittance. Add 3% sales tax on California orders; 10% excise tax on Canadian orders.

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Company.....

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have to sell per pound to be competitive. (Use Table No. 7.)

7. What two happenings cause a drop in the efficiency of an oil water heater after it has been in operation for some time?
8. In what way would a fire fed by a broken oil pipe line be more dangerous than one fed by a broken gas pipe line?
9. At equal effiiciencies, how many pounds of propane would be equivalent to 1 gal. of 136,000 B.t.u. oil?
10. What service does an oil burner require that a gas burner does not?

Refineries and Plants

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N-Butane
Propane

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LOS ANGELES CALIFORNIA

Eastern Section Will Elect Officers

THE annual meeting of the Eastern Section of the Liquefied Petroleum Gas Association will be held Thursday and Friday, June 3 and 4, 1943, at the Hotel Pennsylvania in New York City.

PETER ANDERSON

Arrangements are being made to have representatives of the Office of Defense Transportation, Petroleum Administration for War and War Production Board present. In order that these gentlemen may present information which will be of maximum interest and assistance at the meeting, those expecting to attend are requested to send Florence Jacob, national secretary, any questions concerning government regulations which relate to your business. This will be an excellent opportunity to clarify any confusing issues, and your promptness in submitting your questions is earnestly requested.

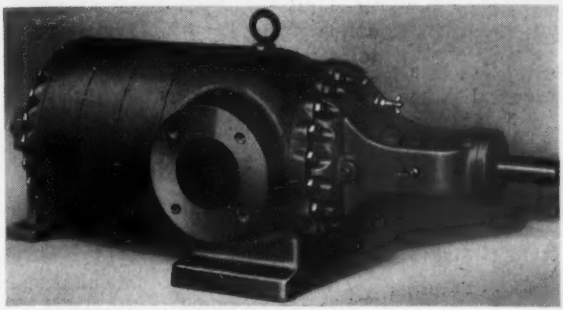
Peter Anderson, Eastern section chairman, will preside at the meeting.

The address of the LPGA is 11 W. 42nd St., New York City.

◆ ◆

Louisiana Butane Dealers Name R. M. Kelton Attorney

Ralph M. Kelton, Baton Rouge, La., was appointed attorney and executive secretary of the Louisiana Butane Dealers Association by the executive board on April 9, according to C. W. Guy, president of the association.



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2. *Tells how to maintain gas unit heater efficiency*
3. *Shows new products*
4. *Gives special news data*
5. *Jokes*
6. *Quick notes from trade papers*

We would like to put your name on our mailing list so you'll receive The Reznor News every month, gratis. You'll look forward to receiving this newsy folder . . . you won't miss an issue . . . it will stimulate you with pictures and news items of industrial achievements. Yes . . . we have beaten Time and Readers' Digest to success stories. The Reznor News is up-to-the-minute — no re-hash, no old stuff. If you are interested in heating, send the coupon, mail a card, or write a letter today.

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Address _____

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CNGA Will Hold Annual Frolic At Rio Hondo June 5th

The California Natural Gasoline Association will hold its annual June frolic on Saturday, June 5, at Rio Hondo Golf Club, 607 Old River School Road, Downey, Calif., according to the joint announcement of William W. Robinson, Jr., association president, and Ben C. Dumm, chairman of the entertainment committee.

WM. ROBINSON, Jr.

Assisting Mr. Dumm are his committeemen, including H. A. Dresser, The Fluor Corp., Ltd.; Lloyd Jones, The Cooper-Bessemer Co.; Ray Todd, Pacific Lighting Corp., and L. P. Sacre, Allied Supply Co.

The 1943 frolic has been specially planned to consider the fact that many CNGA members are working a 48-hour week and accordingly the big time of the event will start with the buffet dinner at 6 o'clock in the evening and continue through the 17-act show, while a full sports program, carded for both the morning and afternoon, has been arranged for those whose schedules will permit participation.

The sports program includes golf, baseball, swimming, tennis, badminton, horseshoes, ping pong and volley ball. The first golfers will tee off at 7 a.m. Breakfast and luncheon will be served. Starting times must be reserved before May 29 with Geo. Tyler, CNGA secretary, at VA. 5521.

The annual baseball game this year will see a team made up from the oil companies pitted against a team from the supply houses. The game will be called promptly at 2 p.m. Those interested in playing on either team should write or phone Walt Bostrom, Meter Department, General Petroleum Corp., Box M, Santa Fe Springs. Phone Whittier 43850.

◆ ◆

California Commission Calls Meeting at Fresno June 8

The California Industrial Accident Commission, which formulates state codes governing the handling of liquefied petroleum gases, has called a meeting of all members of the San Francisco and Los Angeles committees on safety revision orders at Fresno on June 8 to consider the subject of storage and transportation vessels. They will discuss reductions in the amounts of isobutane and normal butane now available and the difficulty of securing vessels for present products.

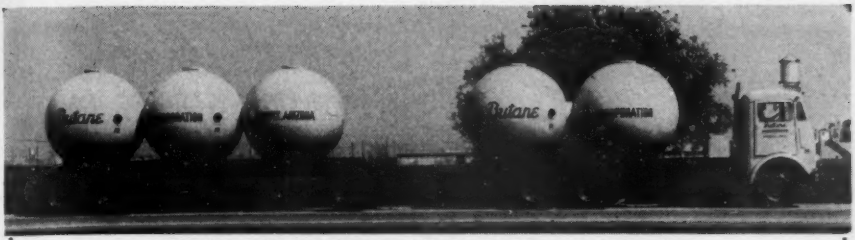
The Fresno meeting will be called at 2 p.m. in the court room of the Fourth District Court of Appeals, Pacific Southwest Bldg. Efforts will be made to complete discussions that afternoon, but it may be necessary to meet in the evening, also.

◆ ◆

NGSMA Elects New Officers During Convention

Charles D. Peterson, the Fisher Governor Co., is the new president of the Natural Gasoline Supply Men's Association, elected by the board of directors during the recent NGAA convention in Dallas, Texas. He succeeds Geo. W. Probst, of Clark Brothers Co.

Other officers elected are A. M. Buxton, Cooper-Bessemer Corp., first vice president; J. A. Knebel, Joseph A. Coy Co., second vice president; V. C. Canter, Frick-Reid Supply Corp., treasurer, and William F. Lowe, secretary.



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Superior Spherical Tanks have approximately 50% more capacity per pound of weight as compared with cylindrical tanks. You get more payload when you buy Superior Spheres!

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A phone call will bring a representative to discuss your needs.

When our boys come marching home!

THEN Industry Will Turn to Production of Plow Shares Instead of Swords.

WE WHO MANUFACTURE

METALBESTOS
GAS VENT & FLUE PIPE

Are Bending Every Effort to Production of War Products.

We'll be seeing you!

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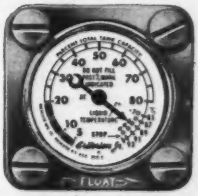

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Criterion GAUGES

James Archer, Oklahoma Inspector, Joins "Skelgas"

James Archer, chief inspector of liquefied petroleum gas equipment and installations in Oklahoma, resigned April 1 and has been appointed assistant manager of the "Skelgas" division of the Skelly Oil Co., at Tulsa, Okla.

Mr. Archer has been succeeded by Walter Choate, of Ada., Okla., who was appointed to his position by T. J. Ellis, formerly of Ochelata, Okla., who, as state fire marshal, is ex-officio state administrator of the Oklahoma liquefied petroleum gas law.

Mr. Archer became chief inspector under Former State Fire Marshal Carl Garner, on Aug. 22, 1941, shortly after passage of the 1941 law transferring jurisdiction over LP-Gas from the corporation commission to the state fire marshal's office. Present rules and regulations under which the LP-Gas industry operates in Oklahoma were adopted in 1941.

Mr. Choate, under direction of Fire Marshal Ellis, is touring the state making inspections of LP-Gas installations. He says that he expects to continue the policy of cooperation with the industry in all cases where a willingness is manifested to comply with regulations.

◆ ◆

Warren Petroleum Announces "Chemical Grade" LP-Gas

Increasing demands for liquefied petroleum gases used for refining lubricating oils and for the manufacture of 100-octane aviation gasoline, butadiene and styrene for the synthetic rubber industry and many other chemicals have indicated the need for more rigid and particular standards and specifications, according to the experience of the Warran Petroleum Corp., Tulsa, Okla.

As a result, the company has made available to the refining and chemical industries a product termed "Chemical Grade" liquefied petroleum gases, a copyrighted designation for its saturated hydrocarbons manufactured to standards that meet the exacting requirement of wartime conditions. Specifically, "Chemical Grade" LP-Gases have a fixed physical composition in contrast to the more commonly variable properties of these gasese when used for domestic fuel.

◆ ◆

Arkansas Amends Law Covering LP-Gas Uses

The Arkansas legislature in March passed "Act 297 . . . . providing for the inspection of containers and equipment used in the storage, transportation, dispensation and utilization of liquefied petroleum gases . . . .," amendments to the existing law.

These define LP-Gases and utilization equipment; provide for a fee not to exceed 25 cents for approved seals on appliances and equipment; require posting of $5000 bonds by manufacturers selling containers or appliances in the state; demand that every manufacturer, jobber or retailer of containers or appliances who makes installations has employed at least one person who shall prove through examination that he has a thorough knowledge and understanding of service and installation requirements, and that all salesmen, installation men, servicemen and repairmen shall pass examinations to obtain certificates for operating. The examining committee will be appointed by the chief state inspector and, in addition to him, consist of representatives, one each, of butane dealers, refiners, appliance manufacturers or jobbers, tank manufacturers and consumers.

Monthly reports must be made to the state of sales and installations. Penalties range from $25 to $250.

THOMAS

DOUBLE DUTY HAND TRUCKS

At last . . . an all purpose, one man truck for moving both cylinders and appliances. No more back breaking lifting, either.

Tapered body gives operator ample room between handles. Cradle construction accommodates any size cylinder up to 100 pound capacity. Wide Bottom flanges give support for appliances. Web strap (optional) holds appliance rigidly.

Rounded handle grips permit skidding from end of delivery truck. A time saving, labor saving, cost cutting truck.

Write for prices and descriptive folder.

THOMAS TRUCK and CASTER CO.

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For Safety and Economy

ETHYL MERCAPTAN

—Purified—

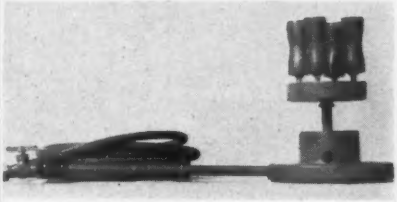
The ACCEPTED standard odorant for liquefied petroleum gases.

MALLINCKRODT CHEMICAL WORKS

ST. LOUIS — NEW YORK

COMBINATION UNIT

for Field and Shop



No. 1-A FIELD UNIT, as shown above with field manifold, can be used under field kettles for melting lead, tar, compounds, etc. It's rugged in construction, portable, economical. Write for details.

Mutual Liquid Gas Co.

3805 W. Imperial Hwy. Inglewood, Calif.

ANSWERS

To Chapter 19
The Bottled Gas Manual

Here are the answers to the questions on Page 56 and which refer to problems in Chapter 19 of THE BOTTLED GAS MANUAL:

1. A. Kerosene, range oil, furnace oil. B. 133,300, 136,000, 141,800 B.t.u. respectively.
2. 2½ to 3 gals. of oil per day.
3. 40 × 136,000 = 5,440,000 B.t.u. input by oil.
   30 × 21,633 = 648,990 B.t.u. input by propane.
   If propane is 60% efficient,
   .60 × 648,990 = 389,394 effective B.t.u. required for the job.
   389,394 ÷ 5,440,000 = 7.1% efficient.
4. 40 × .08 = $3.20 monthly oil bill.
   $3.20 ÷ 30 = 10 2/3 cents per lb.
5. 90 × .05 = $4.50 monthly bill for both cooking and water heating.
   30 × .08 = $2.40 monthly bill for cooking only.
   60 lb. cost $2.10.
   1 lb. would cost $2.10 divided by 60 = 3.5 cents per lb.
6. The 8.8 cent line and 110 lb. column intersect at 8.5 cents per pound.
7. Coating of hard scale on inside of water tank. Coating of thick carbon in combustion chamber and flues.
8. A broken oil pipe would spray liquid oil about and this would keep on burning after the supply to the pipe had been shut off until the line has drained.
   A broken gas pipe merely requires the shutting off of the gas to extinguish the blaze due to it.
9. 6.28 lbs. (From Table 10.)
10. Cleaning.

◆ ◆

LPGA Board of Directors Elected for 1943-44

Several new directors were added to the executive board of the Liquefied Petroleum Gas Association at the annual meeting on March 13-14 in Washington, D. C. They were J. Woodward Martin, M. W. Welty and H. K. Strickler.

Officers of the Association, reported in BUTANE-PROPANE *News* in the April issue (Page 27) are Louis Abramson, Jr., president, D. D. Purrington and H. K. Strickler, vice presidents, and Miss Florence Jacob, acting secretary.

The following compose the entire board of directors: L. Abramson, Jr., Petrolane Gas Corp., New Orleans; G. W. Bach, Skelly Oil Co., Kansas City; M. L. Baker, Standard Oil Co. of Calif., San Francisco; F. B. Boice, Shell Oil Co., Inc., New York; G. L. Brennan, Warren Petroleum Corp., Tulsa, Okla.; G. A. Burrell, Atlantic States Gas Co., New York; J. Woodward Martin, Lone Star Gas Co., Dallas, Texas; K. H. Koach, Green's Fuels, Inc., Sarasota, Fla.; Herman Merker, Pressed Steel Tank Co., Milwaukee; Walter H. Miller, Hamler Boiler & Tank Co., Chicago; Ellsworth L. Mills, The Bastian-Blessing Co., Chicago; W. A. Naumer, Carbide & Carbon Chemicals Corp., New

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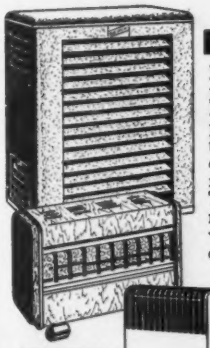

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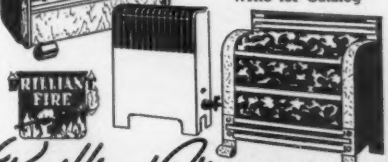

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York; E. Carl Sorby, George D. Roper Corp., Rockford, Ill.; M. W. Welty, Phillips Petroleum Co., New York; W. F. Verkamp, Verkamp Corp., Cincinnati; and H. K. Strickler, The Protane Corp., Erie, Pa.

◆ ◆

WPB Explains Differences in CMP Regulations

Interpretations of the provisions of CMP Regulation No. 5 are applicable to corresponding provisions of Regulation No. 5A, it was made clear April 23 in Interpretation No. 1 of the latter regulation.

Both regulations have to do with the purchase of maintenance, repair and operating supplies. Regulation No. 5 covers the use of preference ratings and allotment numbers and symbols by industry for these purposes, while 5A does the same in the field of government agencies and public and private institutions.

New Managing Director, AGAEM Is H. Leigh Whitelaw

At a meeting of the Association of Gas Appliance and Equipment Manufacturers in Cincinnati, April 28, H. Leigh Whitelaw was unanimously selected as the new managing director. The appointment of Mr. Whitelaw is part of the AGAEM reorganization program to afford better service to members during the wartime and in the post-war period.

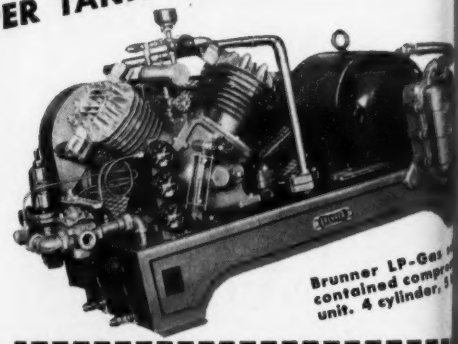
A further step in the AGAEM reorganization set-up is the appointment of Leonard Macomber as the association's Washington representative to replace A. F. Cassidy.

The third new officer approved at the Cincinnati meeting is George H. Richards, legal adviser.

AGAEM President Col. W. F. Rockwell in addressing the meeting stressed closer ties with the American Gas Association.

ARE YOU LOSING 500 to 1000 lbs. LP-Gas Vapors PER TANK CAR UNLOADED?

Many LP-Gas operators are losing 500 to 1000 lbs. of liquid petroleum gas because they can't recover all the gas vapors in tank car unloading. You can get these additional vapors by using the Brunner LP-Gas compressor unit. These vapor savings will quickly pay for the Brunner unit. Besides, the Brunner compressor will reduce the time required for unloading and speed up bottle filling by as much as 25%. Brunner Manufacturing Company, Utica, New York, U. S. A.



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ARMY E NAVY BRUNNER

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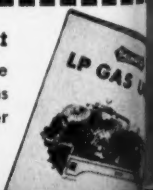
The new booklet describes the Brunner LP-Gas Unit, contains illustrations, diagrams and other pertinent facts on handling liquid petroleum gas.



We are not forgetting

Though we have converted all our facilities to war production, we are not forgetting our customers in the LP-Gas industry.

When the war is won we shall do everything to maintain our reputation as manufacturers of first quality LP-Gas equipment.

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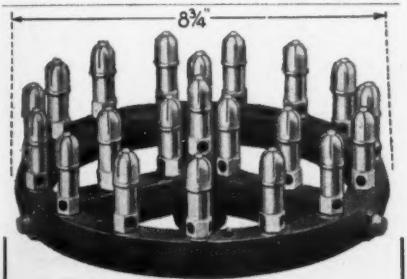

No. C 210 Barber Burner

BARBER APPLIANCE BURNERS

Barber is now working on war production, but wherever possible and permitted, we are still supplying the regular trade. Barber Units, in many standard or special shapes and sizes, are always correctly designed to fit the individual appliance, and give complete combustion on Butane-Propane or any other gas. Now that efficiency is more vital than ever—submit your burner problems to us. Complete catalog on request.

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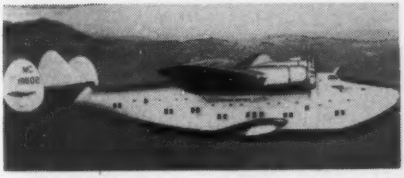
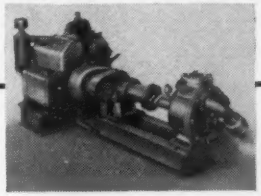


VIKING... A Member of Pan American's "Ground Crew"



At bases throughout the world, Viking Rotary Pumps, in ever increasing numbers are employed as a part of Pan American Airways "ground crew" to insure fast, efficient refueling of giant Clipper planes, now performing vital service to speed Victory for Uncle Sam and our Allies.

The special 150 GPM unit for Pan American, pictured above, includes gasoline engine, double reduction gearing, firewall sleeve and Viking Rotary Pump with valve on head, all mounted on a structural steel base.

When you are unable to get pumps at all . . . or to secure them only after considerable delay . . . please remember that Viking is busy today with many War-time jobs . . . that production for Victory COMES FIRST . . . so that our Fighting Yanks can get back home.

★

VIKING PUMP COMPANY
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H. W. Wickstrom Is Assigned "Little Big Inch" Task

Harold W. Wickstrom, technical editor of BUTANE-PROPANE *News* since it started publication more than four years ago, and a liquefied petroleum gas engineer of unusually wide experience, was last month assigned the job of superintending construction of 82 miles of the "Little Big Inch" war emergency pipe line from Cape Girardeau, Mo., to Norris City, Ill. Officially, he is manager of the pipe line and refinery division of Swinerton & Walberg Co., engineering construction firm of San Francisco, which has a contract for the above named portion of the emergency line, and after the completion of that work he will proceed to other construction projects of the company.

H. W. WICKSTROM

Before joining Swinerton & Walberg Co., Mr. Wickstrom acted as consulting engineer for many important LP-Gas projects on the Pacific Coast, his last being the installation in California of a huge underground storage for petroleum products for the navy, under a contract held by the Southwest Engineering Co., Los Angeles.

Mr. Wickstrom was a member of the advisory board which passed upon editorial material appearing in the Third Edition of the Handbook BUTANE-PROPANE Gases, issued last fall and the standard reference book of the LP-Gas industry.

CALENDAR

Pacific Coast Section, LPGA—St. Francis Hotel, San Francisco, May 28.

Eastern Section, LPGA — Hotel Pennsylvania, New York City, June 3-4.

New Form Must Be Used For Heating, Cooking Equipment

To expedite priority applications for new plumbing and heating equipment for civilian residential use, Form PD-851 was issued by the Plumbing and Heating Division of the WPB on April 23. It can be obtained at WPB Field Offices and is to be filed by the occupant or owner of a private dwelling who desires priority assistance for the purchase of new plumbing, heating, domestic cooking equipment (except electrical), or material, the sale of which is restricted by Limitation Order L-79.

This new form, which will be of mutual assistance to the purchaser, plumber and dealer, further simplifies the procedure so that applications will be handled in the Field Offices, which are more familiar with conditions in local areas.

Form PD-851 should not be used to obtain plumbing and heating equipment for repair or replacement of existing equipment which is worn out, damaged or destroyed. Repair or replacement procedure should be handled by the material suppliers, who are assisted by Order P-84.

Form PD-851 should not be used to acquire any item which is rationed by OPA. The local rationing board should be consulted concerning rationed items.

When applying on Form PD-851, the ultimate consumer (occupant or owner) should file two copies with his nearest WPB Field Office and keep one copy for his own records.

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OPA Authorizes Changes For Warehousing Refrigerators

Manufacturers and distributors who have inventories of new household mechanical refrigerators frozen by WPB orders will be authorized to make a charge for the warehousing services, the Office of Price Administration announced April 24.

This charge will be the amount accrued under a previous authorization, plus $5 per refrigerator during the period May 1, 1943 to Dec. 31, 1943, and plus $10 per refrigerator after Dec. 31, 1943. The previous authorization was 1% per month beginning Feb. 14, 1942, or the date on which the refrigerator was placed in the warehouse, which ever is later, and Sept. 13, 1942.

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